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# East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

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19 January 1985

## EAST EUROPE REPORT

### ECONOMIC AND INDUSTRIAL AFFAIRS

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## INTERNATIONAL AFFAIRS

### BRIEFS

CEMA GROUP ON PRODUCER GOODS--There was a meeting in Warsaw of the permanent working group for improving material supplies; that group operates under the auspices of the CEMA Committee for Cooperation in the Field of Material Supplies. The meeting was chaired by the deputy minister for material management of the GDR, H. Gruener. The delegations of central supply organs of member countries participated. They discussed various problems related to the supply system, especially the matters related to the variety and quality of services provided to recipients by supply companies; they discussed providing economic incentives to use sparingly the imported materials and to encourage mutual exchange of experiences. The participants met with Minister J. Wozniak, who is in charge of the Office of Materials Management. [Text] [Warsaw ZYCIE WARSZAWY in Polish 17-18 Nov 84 p 2] 8801

CSO: 2600/206

COMPLETION DATE OF MARITSA-IZTOK 2 EXTENSION UNCERTAIN

Sofia ZEMEDEL'SKO ZNAME in Bulgarian 9 Nov 84 pp 1, 2

[Article by Ana Atansova: "The New Year Is Close at Hand!"]

[Text] It is enough to recall that the new 210 megawatts of power from the extension of the Maritsa-Iztok 2 Thermal Power Plant will be the only capacities which will be added to the country's energy ring this year in order to explain the accelerated rhythm of construction, the concerns of managers, specialties, and workers for maintaining the governmental deadline. The design and configuration makes use of progressive technologies (direct burning of low caloric coal from the eastern Maritsa area, without preparatory drying, with only bulk and fine chopping), with equipment which is being produced for the first time here; the extension has been checked by the Maritsa complex specialists, builders, and installers, who have gone through the construction of the previous four blocks. But the 3 years (the design called for 4) have gotten "heated up" because of late or erroneous documentation, insufficient organization in the construction, equipment that has come at the wrong time or unevenly, and today--a month and half before the predicted start of operation--the state of the site is extremely tense and difficult.

"In my opinion," says engineer Georgi Gekov, the plenipotentiary of the Central Committee of the Bulgarian Communist Party and of the Council of Ministers, "it is difficult to determine the degree of blame. It is shared by Energoproekt, Zavodski Stroezi, and the investor. The delay now can be explained by the fact that in March of this year a regular resolution was made that by the end of the next month all the designs and design-accounting documentation would be handed over. Since that time, over 160 designs with a cost of 3,300,000 leva have been delivered. And they continue to be delivered."



Engineer Stancho Stanchev, the vice director of Zavodski Stroezi at Maritsa-Iztok, does not seek justification when he explains that to the original delay in the architectural-construction area, because of design irregularities, one must add (and it is their fault) the lack of concentration of sufficient labor. Work cannot go on everywhere where the builders have opened up a front line. The often-prepared schematics, for example, for obtaining rubber conveyor belts from the Chervena Zvezda Plant in Debelelets have once again not been observed. How much time, according to Energoremont, will be needed to install the 6 coal crushers and the 10 large sieves, when up to now only 2 have been obtained?

On the blueprint, the equipment for the turbine hall, the burning section, the electrofilters, and the air warmers is constructed and installed. But what evokes alarm, and the formulation of the four-stage program for beginning operation by 31 December, is the critical lag of the most important subsite, the coal delivery. The complex system includes delivering the coal along two railroad trestles on a 600-meter bridge, which must be built in the remaining days. The tension is caused by the break in the work rates. Workdays and holidays are mixed together, ideas give birth to audacious novel introductions. For the first time at the site, the preparation of the armature has been simplified, technology is replacing the welding.

Where do the people who are embarking on this new path get their certainty for seeking and finding efficient resolutions? There is one secret, and it is called the Maritsa brand.

It determines the strategic direction of Bulgarian power supply for its economic use at raw materials and natural resources sites, where we are expressing a world achievement for processing of low caloric Maritsa coal. It is being affirmed by a contingent of builders, installers, power supply engineers, who have begun to formulate their future labor contributions to Purva Komsomolska at the Maritsa-Iztok 3 Thermal Power Plant. Among them are the shop foremen, the director, the brigades, some of which contain heroes of socialist labor, such as Dimo Tsvetkov, who has advanced to be the leader of the comprehensive installation brigade. He often recalls that he started out in agriculture, but that his path has always followed machines.

"I was a mechanic," he says, "but the Komsomol call for me to be a leader at Maritsa-Iztok led me here. I thought it would be for a short time, but the complex has become my destiny. The same is true for the young men who have endured, who have been tempered by the construction. Those who came here for the money, the fair weather profit seekers, have fallen away, as they do everywhere. My fate has been to find a good brigade leader, an honest and exacting man--Kol'ov Ganev--and it seems that imperceptibly I have taken on his traits, since they often tell me that I resemble him in character and as a leader of the brigade.

"I've worked at all the Maritsa plants and mastered all the specialties, beginning as a machine installer, third degree; now I'm at the seventh. I've been a welder and a crane operator. So, no matter what type of work or what it covers, I can give useful advice.

"Our work is tied exclusively to mechanization and it is not economical for cranes to work only one shift each day. The amount of installation operation remaining compels us to switch to three shifts, to include many of our innovations. At the second furnace, they are working at the height of 64 meters on the small details, and this makes installation more difficult. We've gotten together a 'cover' for the furnace on the land space and have solved the problem with two of them raised up on huge 20 to 50 ton blocks."

"When you have over 25 years of professional experience, it means you know your work well," speaking for these masters who have the fate of the construction in their hands says the leader of the Soviet builders, Aleksandr Tupitsin. "If the work is going well, and some of the start-up operations have already begun, such as blowing out the steam pipes and the acid bath for the furnace, then all the basic work will be done. The site is a difficult and large-scale one, even for our country, and I look at the 325-meter smokestack and imagine only the cutting of around 1,000,000 fireproof bricks, the complexity of the coal delivering operation: I see the optimism of our Bulgarian colleagues."

The time has come for the second stage, blowing the steam out, for which equipment needs to be installed, in order to complete the harmonizing work.

"The third stage," engineer Gekov explains, "includes turning the turbine at 3,000 rpm, which will take place according to provisional schematics, without using the smokestack. Progress in time and on many unresolved problems, because of lack of equipment, which we will overcome by replacement variants will take place, with an increase in the work day, of the work shifts, and by bringing in outside specialists and workers."

At this construction site they do not recall the lack of fulfillment of the task imposed. They would not permit themselves to enter the annals of the construction of the Maritsa-Iztok by breaking this "rule."

12334

CSO: 2200/62



## LACK OF COORDINATION BETWEEN BASIC, APPLIED RESEARCH VIEWED

Prague HOSPODARSKE NOVINY in Czech No 46, 1984 p 4

[Article by RNDr Jiri Cervený, CSc, and Karel Turek, Tesla-A.S. Popov Research Institute for Communications Equipment, Prague: "Lack of Cooperation Between Basic and Applied Research Is the Reason We Lag Behind"]

[Text] Scientific and technical workers in the sectors with such great dynamism as electronics at the present time fully realize the lead of the most technically advanced states and the difficulty of maintaining the present pace of development. For this reason they see in direct cooperation between centers of basic and applied research the possibility of more effectively implementing even very demanding development programs with which individual workplaces alone cannot cope. Experiences from applied research can be demonstrated by several examples.

Basic materials for microelectronics and optical electronics constitute a very extensive and already traditional area of cooperation between applied and basic research. The requirements of purity and structural perfection are so strict that their control and management require unique instruments, ingenious evaluation methods and demanding interpretation of the results measured. Cooperation with the centers of basic research is of essential importance for a deeper understanding of physical phenomena and influences in synthesis, epitaxy, implantation and other technological procedures. These influences also affect the yield, reproductivity and reliability of the function of semiconductor elements and integrated circuits. Although the effect of cooperation between the centers of basic and applied research is significant, it usually cannot be quantified economically and is therefore often omitted or underestimated.

#### Cooperation Should Be Mandatory

Compound semiconductors such as gallium arsenide (GaAs), indium phosphide (InP) and their ternary compounds are an object of intensive research. They constitute the basic material for semiconductor lasers used in transmission by light conductors and microwave semiconductor components which make possible extensive miniaturization and integration of circuits for frequencies within the 1-18 GHz range and higher. They are designed for directional joint equipment, radar and safety equipment, for direct transmission from satellites, input sections on TV receivers and other applications. Part of the research

on compound semiconductors are measuring and diagnostic methods, which constitute the core of cooperation between the workers who develop components and centers of basic research.

Simultaneously with our institute, which has been carrying out research and development of microwave components for several years, the physical properties of gallium arsenide have also been studied by the Electrical Engineering Institute of the SAV [Slovak Academy of Sciences] Center for Electrophysical Research. On the basis of a cooperation agreement, very effective collaboration on this problem has developed in recent years, which has been of benefit to both participants. The institute supplied the SAV center with the samples of epitaxial structures of GaAs and GaInAs. On the other hand, Tesla VUST [Research Institute for Communications Equipment] took over and uses the methodology of measuring and evaluating the properties of semi-insulating GaAs.

The Czechoslovak public is routinely informed about the results of development of signals by light-conducting fibers. The systems for short-distance digital transmission have been developed on the basis of domestic luminiscent diodes and lasers. At the present time work is being carried out on further improvement of the basic material for semiconductor lasers--indium phosphide. Informal cooperation between our institute and the Department of Microelectronics of the Slovak Advanced Technical School has likewise been very active and produced positive results. By making available the samples of indium phosphide pads, we make possible work on the basic research of semiconductor lasers. We have also cooperated with the CSAV [Czechoslovak Academy of Sciences] Physical Institute and CSAV Institute of Radio and Electrical Engineering in the study of structural defects in gallium arsenide with a low density of dislocations and in the measurement of its electroluminescent parameters.

From these cooperation arrangements Tesla VUST obtains very valuable and detailed information on the methods of use of received materials, samples of designed components as well as copies of research reports. This in turn secures further improvement of basic materials. At the same time, our workplaces acquire such a lead time that they obtain first information on the target parameters and users' requirements prior to the development for industrial applications.

When we compare contractual and informal cooperation, we see that cooperation based on cooperation contracts financed by one of the parties produces more significant results, while popular informal cooperation remains largely on the level of noncommittal exchange of information. Another shortcoming of informal cooperation is its short-term and somewhat irregular nature. An objective hindrance in expanding all forms of cooperation is the insufficient knowledge of cooperating centers, of their equipment and long-term orientation. We deem it necessary to find and use the forms more binding for both parties which follow the same goal. The first step in this direction should unquestionably be the loaning of workers for a limited time and exchange of workers for longer periods.

## To Wait?

The solution of technology of components and circuits on compound semiconductors has as of now ended in experimental production carried out by the institute. The users' rising demands, however, make it increasingly urgent to create some production hinterland, for example in the form of a research production unit.

In cooperation with SAV, Tesla Piestany proposed the formation of an association with Tesla VUST and the establishment of a joint work center with a technological line which would make it possible to develop semiconductor elements with the methods appropriate for mass production. A pilot project has been worked out together with the draft of a contract on association whose implementation depends upon the assignment of a state task.

Here we encounter economic obstacles which are known from the times when silicon technology was born: achieving acceptable economic effectiveness of the entire project. Economic effectiveness primarily depends upon the yield, which in turn depends upon technological equipment and on achieving a number of physical parameters.

Although prognoses can be made prior to the start of research, very few users of components and circuits will be willing to ratify supplier-customer relations as long as the yield is not proven at least by experimental production. As to the circuits, whose overall planned yield is within the 5-15 percent range, mastering of technology should be proven by the series production of 10,000-20,000 pieces. At any rate, however, the determination of some indicators such as preliminary price limit will not be objective. Another negative factor is the period required for finding a solution which, because of its technical and technological complexity, is unusually long in this case. It is difficult to justify the fact that the task institutes a program which can significantly affect, both qualitatively and quantitatively, further development of microelectronics in the future.

And thus we come to the crux of the problem. The present-day methodology for proposing state tasks for the development of science and technology with increasing consistency insists on the solution of short-term tasks with clear economic effectiveness and an acceptable period of recovery of invested funds. This must be computed virtually on the basis of discussed supplier-customer relations and set price limits.

This methodology thus does not make it possible to propose a progressive development scheme which would include all stages from basic research to the production start as long as its economic effectiveness is questionable. Yet, most of the examiners agree that in the case of gallium arsenide the technology is very progressive, for which the CSSR possesses good conditions, particularly in the material basis.

It is interesting that discussions are also in progress abroad on what characteristic features a research program whose ultimate goal is the production of efficient inexpensive and reliable integrated circuits based on gallium

arsenide should have. In the risky programs of this type most experts tend to favor a production technological program whose goal would be a reproducible demonstration of 100-200 chips designed for a laboratory sample of the system in question.

It thus seems that higher forms of cooperation, such as the formation of a scientific production association, must be based not on a scientific research project, but only on a stable and profitable production in which the research project constitutes a superstructure. In other words, to wait and find out what is more reliable but less progressive--until progress abroad eliminates any doubt about the realistic nature of the project. In the case, of course, we must anticipate several years' delay in research, and mainly in production.

10501

CSO: 2400/153

GDR STARTING DELIVERIES OF NEW FREIGHTER TO USSR

East Berlin SEEWIRTSCHAFT in German Vol 16 No 10, Oct 84 pp 493-502

[Article by Juergen Vater, Engineer, Warnemuende VEB Shipyard: "Type 'Lo-Ro' 18 Multipurpose Freighter"]

[Text] "Lo-Ro-18" Multipurpose Vargo Vessel

The contract for a series of "Lo-Ro-18" type multipurpose cargo vessels was concluded by the Soviet Foreign Trade Enterprises V/O Sudoimport and the VEB Warnowerft Warnemuende in 1982. The figure "18" means the deadweight carrying capacity of 18000 dwt. The first ship named "Astrakhan" was delivered to the owner on Dec 31, 1983. The first two vessels--M/V. "Astrakhan" and M/V. "Rostov"--entered into service for the Baltic Shipping Company Leningrad, the following two--M/V. "Vinnitsa" and M/V. "Kremenchug"--are to be commissioned by the Black Sea Shipping Company Odessa. More ships of this type are to be delivered the next years.

The "Lo-Ro-18" type multipurpose cargo vessel is a single-screw cargo-ship with bulbous bow and bulbous stern. The ship is arranged for both the conventional vertical cargo handling (lift-on/lift-off) by a three-section angled quarter ramp. The engine room and the super-structures are located aft. The ship has 5 cargo holds. She is developed to carry general and bulk cargoes, ISO-containers, heavy lifts, and bulky goods as well as trailers, lorries, and cars.

The ship is arranged for unlimited trade according to her L-2 class. The cruising range is 14000 nm with the possibility of extending to 20000 nm by reducing the cargo carrying capacity.

Since 1958 more than 10 different types of seagoing cargo ships able to carry 7184 to 19250 tons have been built at the VEB Warnowerft shipyard for various shipping companies of the USSR.



The turnover of the first ship of a new series of type "Lo-Ro" also marked the completion by the Warnowwerft shipyard of the 129th ship for the USSR. The second ship of this series was at the same time the 300th seagoing cargo ship built at the Warnowwerft for shipping companies in 13 countries.

The contracts for delivery of ships to the Soviet Union thus play a decisive role in the development and production range of the Warnowwerft. The traditionally close cooperation with the Ministry of Maritime Fleet of the USSR and the Central Planning and Design Bureau in Leningrad led to the construction of the new multipurpose cargo ship of "Lo-Ro." Like the ship types preceding it, it too was developed and planned in close cooperation with these institutions.

In 1982 a contract calling for the construction of a series of multipurpose cargo ships (freighters) of type "Lo-Ro" 18 was concluded with the Soviet foreign trade enterprise V/O Sudo-import. The 18 stands for the load-carrying capacity of 18000 tons. The first ship of this series, built for use by youths and as a ship for "German-Soviet Friendship," was turned over on 31 December 1983 to the contracting authority and crew as the "Astrakhan." The first two ships, MS "Astrakhan" and MS "Rostov," are destined for the Baltic Shipping Company in Leningrad, the next two, MS "Vinnitsa" and MS "Kremenchug," for the Black Sea Shipping Company in Odessa. Additional ships of this type will follow in the coming years.

## 1. Ship Design

### 1.1. Ship Type and Utilization

The multipurpose freighter of type "Lo-Ro" 18 is a single-screw motor ship with bulbous bow and stern. It is designed to permit both conventional vertical cargo handling (lift on/lift off) and horizontal loading/unloading of rolling goods via a three-section angled stern ramp. The engine room and superstructure above it are located all the way aft. The ship has five cargo holds. Cargo hold 1 is bounded by transverse bulkheads as far up as the forecastle deck, while cargo holds 2 to 4 are separated from one another by bulkheads only below the 2nd deck. Cargo hold 5 is formed by the passageways alongside the engine shaft above the 2nd deck. Two decks accessible via a stern ramp and extending to the forward edge of cargo hold 2 constitute the 2nd deck in the hold area.

The ship is intended for the transport of piece goods and bulk material, ISO containers (length 40 ft and 20 ft, height 8 1/2 ft), of heavy cargo, long material, and bulky goods, as well as trailers and vehicles with fuel in their tanks (trucks, passenger cars). Grain can be transported in the stowage space and in the tween-deck (cargo holds 2 to 4), with the swung-open hatch covers (along the driving deck)--including the hatch shafts on the main deck--constituting the loading space in the tween-deck. Mineral coal can be transported the same way.

Cargo hold 1 is likewise intended for loading with grain but not with mineral coal. Also suitable for loading in this cargo hold are hazardous materials (explosive as well as easily flammable goods such as paints and packed fuels and lubricants).

The ship's operating area is unlimited, in keeping with class L-2. Its range is 14000 nm and can be increased to 20000 nm by reducing the load-carrying capacity.

## 1.2. Rules, Class and Technical Data

The ship was designed in accordance with the rules, norms and instructions of the Maritime Register of the USSR, 1977 edition, with all changes, and was built under the supervision of the GDR marine review and classification (agency). It has the class designation KM ★ II 2 A 2. In addition, practically all national and international rules and conventions valid as of the time the technology was agreed upon were taken into account, including:

- International Convention for the Protection of Human Life at Sea (SOLAS), 1974, with the protocol of 1978
- International Convention for the Prevention of Pollution by Ships 1973, with the protocol of 1978
- Convention for the Protection of the Baltic Sea 1974
- Convention on International Rules for the Prevention of Ship Collisions at Sea 1972
- International Loading Marks Convention 1966
- Tonnage Measurement Rules of the Register of the USSR 1980
- Rules for the Tonnage Measurement of Seagoing Ships Transiting the Suez and Panama Canals
- International Convention on Radiotelephony on Meter Waves 1975
- Rules on Navigation in the Suez Canal 1977
- Rules on Transiting the North Sea-Baltic Sea Canal 1972
- Rules on Transiting the Panama Canal 1979
- Requirements of Australian Unions Regarding Cargo Hold Ladders of Seagoing Vessels 1974 and 1975
- IMCD Resolutions A 209 1971 and A 285 1973, A 325, A 288, A 415
- Coastal Security Code of the U.S.A. (Coast Guard 1972)

- Rules on the Transport of Grain (Register 1980)
- Equipment of Ships in Accordance with International Conventions (Register 1977)
- Sanitation Norms for Vibrations on Seagoing, River and Inland Waterways Vessels 1975
- Workers Protection Requirements Regarding General Layout, Equipment and Facilities of Seagoing Vessels 1976, as revised in 1980.

#### Main Technical Data

Length overall	173.50 m
Length between the perpendiculars	161.00 m
Width of frame	23.05 m
Height of side to main deck	13.70 m
Height of side to 2nd deck	8.30 m/12.00 m
Freeboard draft from bottom edge of keel	10.02 m
Specification draft from bottom edge of keel	8.52 m
Load-carrying capacity with draft (T) equaling 10.02 m	17850 t
Load-carrying capacity with draft (T) equaling 8.52 m	13090 t
Cargo hold volume (piece goods)	25677 m <sup>3</sup>
Cargo hold volume (bulk material)	20439 m <sup>3</sup>
Ro/Ro deck area	2370 m <sup>2</sup>
Max. container loading capacity	533 TEU
Below deck	333 TEU
On weather deck	200 TEU
Engine output/turning speed	7600 KW/145 rpm
Test cruise speed with specification draft	17.4 knots
Crew (including 6 trainees and 1 pilot)	39 persons

Action radius 14000 nm (20000 nm)

#### Tank capacities

--Heavy oil I	2016.2 m <sup>3</sup>
--Heavy oil II	561.7 m <sup>3</sup>
--Gas oil	34.3 m <sup>3</sup>
--Lubricating oil	38.2 m <sup>3</sup>
--Cylinder oil	36.5 m <sup>3</sup>
--Cooling water and boiler water	55.9 m <sup>3</sup>
--Sanitary fresh water	141.5 m <sup>3</sup>
--Drinking water	58.6 m <sup>3</sup>
--Ballast water	439.0 m <sup>3</sup>

## 2. Ship Structural Component

### 2.1. Hull

The hull is welded in its entirety and is constructed of volume and plane sections. All plates and profile sections are descaled with steel-shot blasting and then treated with a preliminary preservative. Also the stem and bulbous bow as well as the rudder post and the rudder support are of welded construction. The outer skin is stiffened along its entire length by transverse ribs. In the area of cargo holds 2 to 4, vertically folder longitudinal bulkheads form a double hull below the 2nd deck. Within these side tanks, the bracing of the sides is supported by longitudinal stringers as well as frame discs. Frame ribs and stringers strenghten the side bracing in the engine room area. The floor in the bow is protected against slamming by reinforced plates. In keeping with its ice class, all plates along the ice belt are reinforced, and intermediate ribs are positioned in the bow.

In the double floor, floor plates are postioned at every rib from rib 12 to 50 and from rib 160 to 195, and the area between them consists of longitudinal ribs with floor plates at every other rib. Underneath the container support points are side members and supporting plates. The main engine mount base is located directly on reinforced foundation plates of the inner floor, which are supported by foundation carriers. A double pipeline runs along the ship centerline from rib 43 to 171.

Six watertight transverse bulkheads subdivide the ship into sections. All bulkheads, except for the two that bound cargo hold 1 at ribs 168

and 195, and below the 2nd deck, or have drive-through openings on the 2nd deck.

The main deck is of longitudinal rib construction in the area alongside the hatches and the engine shaft, and of transverse rib construction between the hatches and the bow. In the area between the cargo holds 2 and 4, the support is provided by the longitudinal coamings, which are supported by cantilevers, supports on the level of the hatch walls (rib 93/94, 102/103, 147/148) as far as the 2nd deck, as well as the transverse coamings. In cargo hold 1, the longitudinal and transverse walls of the hatch shaft carry the main and forecastle deck.

The 2nd deck is of longitudinal rib construction alongside the hatches and the engine shaft, and of transverse rib construction between the hatches and at the ends of the ship. The bracing is provided in the area of cargo holds 2 to 4 by tank longitudinal and transverse bulkheads and the transverse coamings, which carry the load of the longitudinally braced shaft covers as well as heavy cantilever frames in the area of the shaft walls (?).

The other decks are of transverse rib construction and are supported by bulkheads, shafts, load-bearing walls, girders and braces. The aft superstructure is supported via outer and inner walls, the engine shaft, as well as wide lateral bracing plates on the bonding of the hull.

## 2.2. General Equipment

The bow anchor and warping gear consists of two automatic towline winches with attached anchor component (nominal lifting power 125 kN, manufactured by VEB KGW Schwerin) with preselectable chain length and indicator on the forecastle and in the pilothouse, as well as an electrohydraulic remote control from the pilothouse, three Gruson anchors weighing 6450 kg each (one of them as a backup) and each with 302.5 m of highly refractory anchor chain with a 70 mm diameter. The lowering speed of the anchor chain is automatically kept constant. For warping operations there are two each additional automatic towline winches on the forecastle and poop decks having a nominal pulling power of 80 kN. Switching to automatic operation via the automatic towline winches following mooring is possible, with the required pulling force being preselectable. The fast speed can be used for pulling in the cable.

The arrangement of bitts, chocks and guide pulleys conforms to requirements and was undertaken in accordance with the rules on transiting the Panama Canal.

The rudder is a streamlined semisuspended rudder (welded construction) and is actuated by an hydroelectric 2-cylinder steering engine (manufactured by VEB KGW Schwerin) having a nominal torque of 314 kNm and a maximum torque of 471 kNm. The rudder equipment consists of two independently



working pump units, one of which is a reserve unit. During steering maneuvers, the second pump can be switched on in addition, thus reducing the time required for a turn by approximately 50 percent. There is an emergency hydraulic power unit at the main deck level, which can be operated manually. The electrical steering of the steering engine is possible from the bridge either manually or by means of automatic steering equipment coupled to the gyro compass. The steering engine is equipped with a mechanical rudder position indicator. Rudder position indicators are located in the pilothouse on the bridge wings, in the engine control room, and in the emergency hydraulic power unit room. Additional rudder equipment includes a bow thruster unit, which improves steerability at low speeds and during maneuvers from a standing position. The maximum thrust of the bow thruster unit is 120 kN.

The boat and rescue equipment is located on the boat deck on the port and starboard sides. The closed lifeboats from VEB Schiffswerft Rechlin consist of fiberglass-reinforced polyester and are equipped to carry 44 persons each. They are lowered by gravity, with the lowering speed regulated by a centrifugal brake. The lifeboats are raised by a boat winch having a nominal lifting force of 40 kN, likewise located on the boat deck underneath the boats. Launching the lifeboats is possible during lists up to 15 degrees and pitching up to 10 degrees. Also located on the boat deck on both the port and starboard sides are three each self-inflating life rafts in plastic containers with automatic release, each with a 16-person capacity. Another life raft, for six persons, is located on the forecastle deck. Life preservers and collars complete the rescue equipment.

Food is taken aboard by means of a 1-ton davit. Another 1-ton davit is used for lowering the ship's boat and the working raft. For servicing the engine shaft, a 2-ton cargo boom is located on the port side.

The following facilities are available for horizontal and vertical cargo handling:

A three-sectioned angled stern ramp (license Navire Cargo Gear), manufactured by VEB Schiffswerft Oderberg, is installed for horizontal cargo handling (Ro/Ro). The ramp is raised and lowered by means of a cable line, while its folding, locking, and maintaining the proper distance from the pier are done by hydraulic equipment. When closed, the lower ramp section serves as a watertight closures for the stern opening. The overall length of the ramp is 25 m, with the usable roadway width being 5.8 m. The ramp is designed for loads up to 45 t and a maximum per axle load of 18 t.

For vertical cargo handling (Lo/Lo), two double ship's luffing cranes with carrying capacities of 2 x 12.5 t and manufactured by VEB Klement-Gottwald-Werke Schwerin are located between cargo holds 1 and 2 and between cargo holds 3 and 4. They are equipped with transversing hooks for handling piece goods, and with two motorized blade buckets

with a capacity of 6.3 m<sup>3</sup> for bulk cargo handling. The forward double ship's luffing crane is suited for loading and unloading hazardous materials. Also available are four 25-ton booms and one 125-ton boom, located between cargo holds 2 and 3. The 125-ton heavy boom is equipped with special hardware at the head which makes it possible to cross through the plane of the posts. The working range of the 25-ton booms is as follows:

Minimum upward angle	15 degrees
Maximum upward angle	78 degrees
Maximum traverse angle	60 degrees from midship

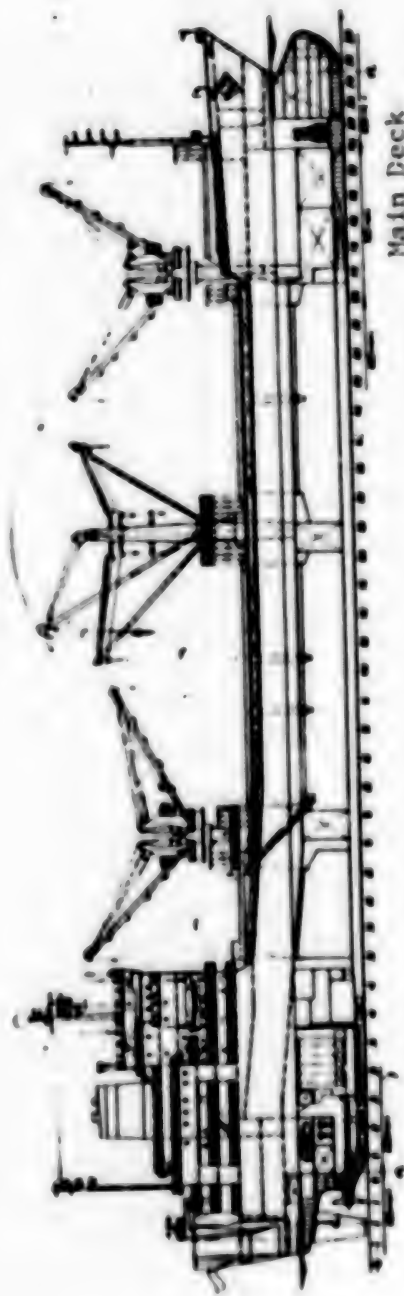
The working range of the 125-ton boom is as follows:

Minimum upward angle	25 degrees
Maximum upward angle	65 degrees
Maximum traverse angle	60 degrees from midship

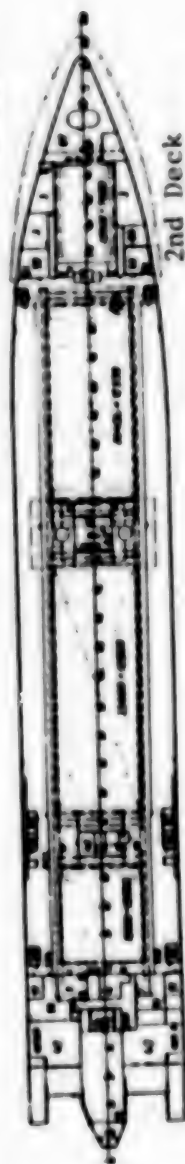
The radial range beyond the ship's side at minimum upward angle and maximum traverse angle from midship: 7.0 m.

The 125-ton boom can work with listing up to 10 degrees and pitching up to 2 degrees. The 25-ton booms and the 125-ton heavy boom are lowered to a nearly horizontal position and lashed in a seaworthy state to knock-down supporting frames. A personnel elevator (capacity three persons) leads from the 2nd deck to the bridge.

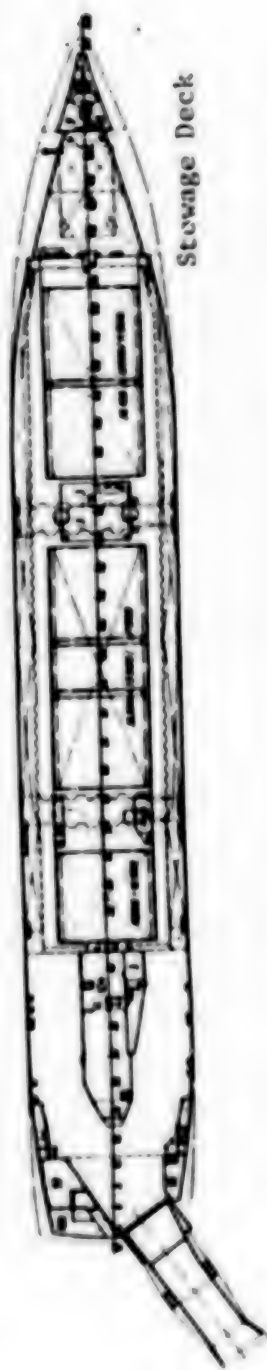
The hatch covers of cargo holds 1 to 4 on the weather deck are hydraulically actuated folding covers (system Foldtite). The hatch covers of the intermediate decks consist of thwartship stowing hinged lids, which at hatch 1 are actuated hydraulically and at hatches 2 to 4 via rope tackle, the latter pulled by the 25-ton crane or 25-ton boom. The vertically stowed lids are suitable for absorbing the horizontal forces of the container block and also serve to enclose the filling shaft for bulk cargo.



Main Deck  
Rear View



2nd Deck  
Rear View



Stowage Deck  
Rear View



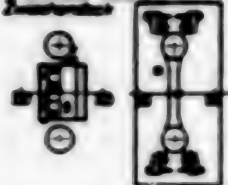
Stowage Deck  
Rear View

Platform  
17100 above Upper  
Edge of Platform 17100 ab ONY  
Keel



Winch Platform  
Minderplattform

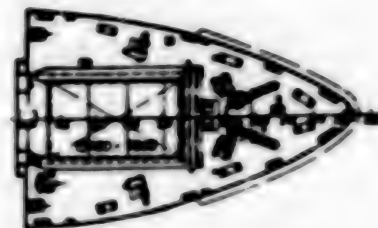
Tween-deck



DF'ing Deck  
Paildeck



Forecastle Deck  
Backdeck



Tween-Decks

10700 above  
upper edge  
of keel

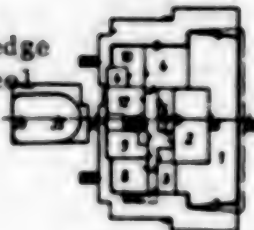


Zwischendecks

10700/11000  
16800 upper edge  
of keel



Kommandobrücke  
Bridge



Poopedek  
Poop Deck



Construction Deck

Aufbaudeck



Captain's deck

Kapitän'sdeck

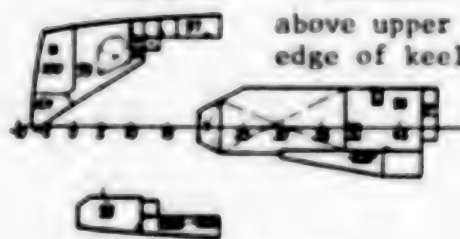


Tween-Decks  
15000  
Zwischendecks  
13450

15000 über ONY

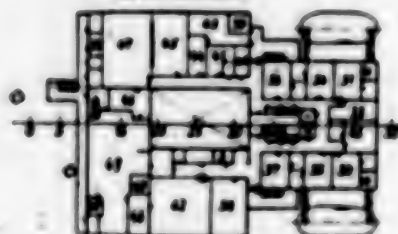
13450 über ONY

above upper  
edge of keel

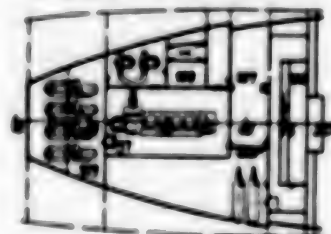


Bridge Deck

Brückendeck



3 Deck 3rd Deck



Boat Deck



Plattformdeck Platform Deck



Figure 6. General Layout Plan

1	Pilothouse	49	Galley
2	Chart room	50	Lathe operator
3	Storage room	51	Carpenter
4	Radio room	52	Seamen
5	Radar room	53	Machinist
6	Transmitter room	54	Welder
7	Personnel elevator	55	Sports room
8	Pilot	56	Physical fitness equipment room
9	Electric equipment room	57	Emergency exit
10	Teletype room	58	Ironing room
11	Battery room	59	Drying room
12	Chart storage room	60	Laundry
13	Chief enginner	61	Sick bay
14	Radio officer	62	Medical supplies
15	Officer	63	Emergency switching panel
16	Captain	64	Isolation ward
17	First mate	65	Emergency diesel room
18	Chief radio operator	66	Refuse incinerator
19	Engine office	67	Food supplies elevator
20	Swimming pool	68	Loading office
21	Electrical engineer	69	Hobby room
22	Second engineer	70	Photo lab
23	Second mate	71	Trainee
24	Third mate	72	Shower room
25	Third engineer	73	Change room
26	Fourth engineer	74	Airconditioning center
27	Fourth mate	75	Butter storage
28	Ventilator room and storage	76	Meat storage
29	Deck storage	77	Refrigerated meat
30	Chief cook	78	Fish storage
31	Boatswain	79	Sauna
32	Ship's doctor	80	Dry goods
33	Radio transmission room	81	Vegetables and potatoes
34	Second electrical engineer	82	Beverage storage
35	Baker	83	Fruit
36	Electrician	84	Steam fire extinguisher
37	Steward	85	Acetylene bottle room
38	Officers' dayroom	86	Oxygen bottle room
39	Fire-fighting equipment	87	Boatswain's load (?)
40	Ventilator room	88	Carpenter's storage
41	Library	89	Carpentry shop
42	Officers' dining room	90	Paint room
43	Film storage	91	Oil receiving point
44	Film projection room	92	Arc welding shop
45	Crew dayroom	93	Electrical shop
46	Food preparation room	94	Gyro compass room
47	Crew dining room	95	Hydraulics room
48	Daily food supply room	96	Machine storage room

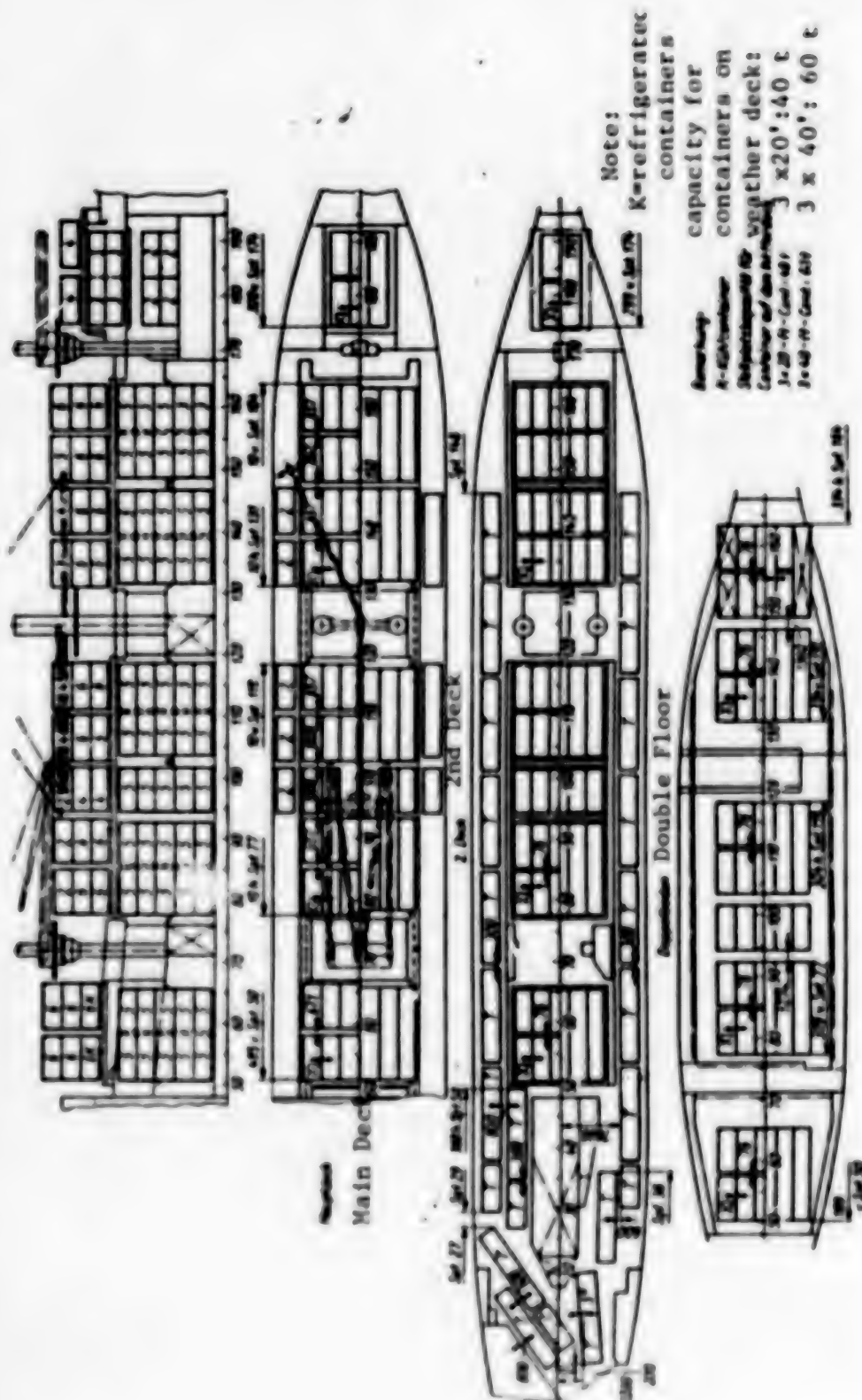


97	Air compressor	105	Steering engine room
98	Refrigeration equipment room	106	Main switching panel
99	Carbon dioxide room	107	Engine control room
100	Hawser room	108	Nozzle resting room
101	Auxiliary steering engine room	109	Diesel generator room
102	Boatswain's stores	110	Separator room
103	Bow thruster unit	111	Fire extinguisher pump room
104	Machine shop		

### 2.3. Load Capacity

For the horizontal movement of rolling loads, 2370 m<sup>2</sup> are available on the 2nd deck (cargo holds 2 to 4 and the engine room area as far as the ramp). Via the stern ramp, 232 passenger cars, 81 trucks, ninety 20-foot trailers can be transported here, as desired. In all, 533 TEU containers can be loaded, including 289 in five rows abreast in the cargo holds, 44 on trailers on the Ro/Ro deck, and 200 on the weather deck, the latter driven on the hatches in rows of six abreast. Thirty 20-foot refrigerated containers having their own electrically driven generators can be moved on deck. The containers are stacked a maximum of five high and all can be 8.5 feet high. On the weather deck hatches, the containers are stacked two high (in some cases three). A single layer of containers is carried on the forecastle deck.

Figure 7. Container Loading Plan (Open Tween-Deck)





To limit the list angle resulting from loading/unloading cargo on one side of the ship, the ship is equipped with list compensation gear, which works both automatically and by hand. This system guarantees compensation under all operating conditions of the list which can take place during loading/unloading of cargo on one side. Grain and other bulk cargo can be carried in holds 1 to 4. For this purpose the tween-deck hatch covers are to be opened. Low grain partitions of wood separate the bulk cargo hold from the Ro/Ro area next to it. Also with tween-deck hatches open, rolling cargo can be stowed on the remaining deck strip. For lashing the rolling cargo, cross-slotted fasteners are welded flush with the deck in the deck area and on the hatch covers, in which the lashing is engaged.

Maximum Number of Stowed Containers (Open Tween-Deck)

<u>Cargo Hold</u>	<u>Deck</u>	<u>20' Variant</u>		<u>40' Variant</u>		<u>TEU</u>
		<u>20' Cont.</u>	<u>Total</u>	<u>40' Cont.</u>	<u>20' Cont.</u>	<u>Total</u>
Hold 1	Stowage	8	8	4	-	9
	Main deck	12	12	6	-	12
	Forecastle deck	8	8	4	-	8
Hold 2	Stowage	94	94	46	2	94
	Main deck	66	66	32	2	66
Hold 3	Stowage	125	125	50	25	125
	Main Deck	70	70	30	10	70
Hold 4	Stowage	50	50	25	-	50
	Main deck	36	36	18	-	36
Containers on Trailers (TEU)		44	44	19	6	44
Containers on Side of Main Deck		20	20	8	4	20
Total for Ship		533	533	242	49	533

Maximum Number of Stowed Containers (Closed Tween-Deck)

Cargo Hold	2nd Deck	20'Variant		40'Variant		TEU
		20'Cont.	Total	40'Cont.	20'Cont.	Total
Hold 1	Tank decks	8	8	4	-	8
	Main deck	12	12	6	-	12
	Forecastle deck	8	8	4	-	8
Hold 2	Stowage	34	34	16	2	34
	2nd deck	40	40	20	-	40
	Main deck	66	66	32	2	66
Hold 3	Stowage	50	50	20	10	50
	2nd deck	50	50	20	10	50
	Main deck	70	70	30	10	70
Hold 4	Stowage	20	20	10	-	20
	2nd deck	20	20	10	-	20
	Main deck	36	36	18	-	36
Containers on Trailers (TEU)		44	44	19	6	44
Containers on Side of Main Deck		20	20	8	4	20
Total for Ship		478	478	217	44	478

#### 2.4 Facilities

For the accommodation of the 32-man crew, the six trainees on board, and the pilot, the superstructure was designed with consideration given to the latest findings with respect to comforts, noise, and fire prevention. For this purpose, the new facilities system ISIS-50 was used at the Warnowwerft for the first time. The vertical passageway and partitioning areas of prefabricated 50 mm thick wall sections consist of organically coated sheet steel with internally bonded non-flammable mineral wool panels, and the ceilings, likewise insulated with mineral wool, are of galvanized and painted sheet metal.



All crew members have their own cabins with separate sanitary section. A sports room, sauna, swimming pool, photo lab, library, hobby room, and film projection equipment in the crew dining room are available for off-duty activities. All inhabited rooms are equipped with electric induction heaters connected to the airconditioning system. Thermal insulation was installed on the basis of an outside temperature from  $+ 32^{\circ}\text{C}$  to  $- 32^{\circ}\text{C}$ . For thermal insulation of living, work and communal rooms, superfine fiberglass 80 mm, glass wool, coarse-weave matting and mineral wool panels for walls and ceiling are used. The superfine fiberglass 80 mm has an aluminum foil backing.

Results of sound and vibration measurements confirmed the favorable impression gained by all participants during the test run.

## 2.5. Ventilation, Airconditioning and Refrigeration Equipment

Quarters and communal rooms are fully climatized by two 2-channel-group airconditioning units, which have already been successfully used on ships of the "Mercur II" series and which will assure that parameters are met with external temperatures between  $- 25^{\circ}\text{C}$  and  $+ 31^{\circ}\text{C}$ . The air output of each unit is circa  $5900\text{ m}^3/\text{h}$ . The fully climatized rooms are grouped together into room sets, with the possibility existing of setting the temperature individually. All wall induction units are equipped with electrical heating elements, which when the air-conditioning is turned off can be used only as electric heaters. Two airconditioners supply the engine control room.

The cargo holds are ventilated by a large number of supply and exhaust, as well as reversible, fans which work in various regimes (e.g., container load, mineral coal load, harbor operation, etc.). The external openings of the ventilation equipment are provided with water-tight closures. Ventilators and ventilator flaps are remotely controllable from the bridge. All supply and exhaust ventilators can be turned on and off, or settings changed, from the bridge and from power sets. The activation of ventilators, which is possible only with flaps open, is signaled to the bridge, as are the open or closed positions of ventilator flaps and a breakdown in the ventilator operation.

## 3. Engine Structural Component

To lay out the engine room as optimally as possible from the standpoint of adequate assembly/disassembly capabilities, a scale model was prepared. Thanks to this constructive and technological preliminary step, it was possible to combine many of the auxiliary power units--consistent with their functioning principle--into assembly blocks, including tubing and fittings.

### 3.1. Main Propulsion Unit

The ship is propelled by a straightforward two-cycle marine diesel engine of type K 5 SZ 70/125 B, having an output of 7600 KW at 145 rpm, and produced under license from MAN by VEB Dieselmotorenwerk Rostock. It is supplied with air for combustion by an exhaust gas turbocharger, which in the lower output range (up to 50 percent of the nominal output) is provided with air by one of the two preblowers operating in series. The engine is coupled directly to the line shaft and drives a cast four-bladed propeller with a diameter of 5.0 m. The engine can run on heavy oil with a viscosity of  $865 \text{ mm}^2/\text{s}/310 \text{ K}$  (3500 sec. Redw. I/100°F).

### 3.2. Auxiliary Engines

Four diesel generators of type 6 VDS 26/20 AL-2 and with an output of 580 KW each at 1000 rpm (manufactured by SKL Magdeburg) are available to supply power. The brushless three-phase constant-voltage generators (from Elmo Dessau) each produce 665 kVA at 390 V. The power supply is controlled fully automatically by the power generation automatic system. These generator units are located in a separate room aft of the engine room.

Steam is generated by a single-cylinder water pipe boiler of type OER 2 (from VEB Stroemungsmaschinen Pirna)--with a steam output of 4.0 t/h at a steam pressure of 0.49...0.68 MPa--and an exhaust boiler with a steam output of 2.0 to 2.38 t/h at a steam pressure of 0.68 to 0.78 MPa with separate steam cylinder. Both steam generators are supplied by the firm VEB Dampfkesselbau Dresden-Uebigau. To improve steerability at low speeds and during maneuvers while in a standing position, a single-motor bow thruster unit (output of motor 800 KW), newly developed by VEB Dieselmotorenwerk Rostock and with a thrust of circa 120 kN, is installed in the bow.

The following facilities are available for compliance with environmental rules:

--Refuse incineration plant of type SAVA 75/50, produced by VEB Elbewerften Boizenburg/Rosslau. Incineration of non-explosive combustible solid refuse, such as packing materials, cleaning rags, and kitchen garbage, used oil and sludge oil of the separators. The burners work on the mechanical atomizer principle and use diesel oil for ignition and to support combustion of refuse.

--Sewage (excrement) processing plant of type KA-MR, 1, 5 S 50, manufactured by VEB Abwasserbehandlungsanlagen Merseburg, which works on the biological decomposition principle.

--Bilge water oil separator with successive stage filter, from VEB Schiffsanlagenbau Barth. It guarantees the maintenance of a residual oil purity level of 15 mg/l. If this purity level is exceeded, the pump stops automatically and warning is given.

For fire-fighting purposes, in addition to the standard systems such as water, foam and steam fire extinguishing systems, there is also a newly developed CO<sub>2</sub> storage facility, in which liquid CO<sub>2</sub> is stored at -18° C and 2 MPa. Connected to this facility are the cargo holds, the engine room, emergency diesel room, refuse incineration room, and paint room. This facility is supplied by two independent refrigeration units.

#### 4. Electrotechnical Component

##### 4.1. Power Generation and Distribution

The onboard power net is an insulated three-wire system for 380 V 50 Hz three-phase current. Primarily the following voltages are utilized:

- 380 V for power consumers, plug and socket connection for refrigerated containers;
- 220V for lighting, onboard services, heating, supplementary heater for airconditioners, plug-and-socket connections for refrigerated containers and portable consumers, which are firmly mounted during operation, and for portable cargo hold lighting;
- 110 V single-phase alternating current (AC) for function generator systems, steering equipment indicator, engine order telegraph facility, length of extended chain of the anchor winch;
- 42 V single-phase AC for portable tools;
- 24 V single-phase AC for lighting installed below floor level in the engine room;
- 12 V single-phase AC for portable repair lighting;
- 24 V direct current for emergency lighting in the area of the cabin decks, fire reporting, ship's alarm equipment, CO<sub>2</sub> gas prewarning system, engine monitoring equipment, and various automatic controls.

The supply of electricity for consumers takes place via a radiating network directly from the main or emergency distribution panel as well as via distribution or subdistribution networks. The main current is generated via four brushless three-phase constant-voltage generators supplied by VEB Elektromotorenwerk Dessau and having an electronic exciter with an output of 665 kVA. The generators are capable of extended parallel operation. Available for emergency power is a three-phase constant-voltage generator with attached electronic exciter of 220 kVA. While docked, the ship's power net can be fed via a link to the landline with 380 V 50 Hz three-phase current up to 400 A. The main distribution panel is installed athwartships on the 3rd deck in a specially ventilated room located directly next to the engine control room.

##### 4.2. Automatic Facilities

The extent of automation resources available corresponds to the automation category A 2 of the Register of the USSR. The automation facilities make possible the remote control of the main engine from the bridge, as well as control and monitoring of the engine plant by an engineer-on-duty from the engine control room, without posting a watch in the engine room, for 24-hour periods while the ship is under way; plus the unattended (no-watch) operation of the engine plant, equipment and systems for 24-hour periods with unattended engine control room and engine room while the ship is lying in the harbor. The monitoring and control centers for the ship's engine operation are located in the pilothouse and in the engine control room on the 3rd deck.

The following equipment complexes assure an unattended operation:

- Automated remote control of the main engine from the bridge,
- Automatic temperature control equipment,
- Automatic viscosity control equipment,
- Automatic switching of the pumps to standby and an automatic resetting to the on-position following voltage loss,
- Program control for separators,
- Automation of the power generation plant, with the automatic mechanism comprising a stored-program electronic system with two microcomputers,
- Automated auxiliary and exhaust boiler system.

In addition, the auxiliary engine plant is automated with the following:

- Fresh water production plant,
- Compressed air drying equipment,
- Drinking water and wash water supply,
- Command equipment, food equipment, and airconditioning.

For the remote actuation of the bilge, ballast and fuel valves, a control console is located in the engine control room, in which hydraulic routing valves for remote control as well as an electric remote control for pumping out water ballast in the area of the low thruster unit. The sewage treatment plant and refuse incineration plant likewise work automatically.

A malfunction reporting system monitors the various systems of the ship's engine plant for upper and lower limits and in addition registers malfunctions in the automatic facilities. The malfunctions are then reported optically by the control console and acoustically by a horn.



To protect against the danger of fires, a central fire warning system has been set up in the pilothouse on the bridge, which is connected to fire alarm boxes in all parts of the ship. This includes:

- Heat sensing alarm points in the living areas, technical rooms, and kitchen/dining rooms,
- Explosion-proof alarms in the cargo hold areas,
- Hand-actuated alarm boxes in the living areas, operational passageways, on the open deck, and in the engine room area,
- Ionization alarm in the engine room area.

The system is self-checking with respect to wire breaks, short circuits, ground leaks, and failure of the main feed, and during a fire alarm activates the ship's alarm system.

The following equipment complexes belong to the monitoring (control) center on the bridge:

Bridge Trip Console:

- Section for remote control of the main engine, in which the remote control transmitter combined with the engine order telegraph and the signal board for the remote control system are located,
- Signal system for control in the absence of the person on duty in the engine control room ("Dead Man"),
- Operational (duty) telephone system,
- Intercom system,
- Remote control of the hand-operated fire extinguisher pumps,
- Propeller shaft rpm-indicator,
- Ship's speed receiver,
- Remote control for bow thruster unit.

Also located on the bridge are the fire warning center, propeller shaft rpm-indicator, overhead rudder position receiver, turn (maneuver) printer with associated equipment, instruments to measure the length of the extended chain and remote actuation of the anchor lowering by the two anchor winches, signal board for monitoring the engine area. On the wings of the bridge are control components for the bow thruster units as well as rpm-indicator for the propeller shaft and a rudder position indicator. From the monitoring center (engine control room), it is possible to monitor and operate the engine system. Remote monitoring of the engine



room is possible irrespective of the steering mode (manual, remote, automatic). Located in the engine control room are the following: engine control position equipped with mechanical-pneumatic maneuvering gear for direct main engine operation (change direction, start engine, change rpm, stop), engine order telegraph system, signal board for automated remote control of the main engine, selector switch for remote control of the main engine, movement of the ship from the bridge or from the engine control room, control instruments for the main engine, propeller shaft rpm-indicator, rpm indicator for exhaust gas turbocharger, operational telephone, steering system indicator.

For the accommodation of control instruments, operating and automation equipment for the main and auxiliary engine plants, the control console is equipped with the following:

Control and operating equipment for the main and auxiliary engine plants; malfunction indicator for the systems, with lights to indicate normal operation or breakdown; ship's speed receiver; temperature gauge for heavy oil and lubricating oil tanks; traffic telephone; operational telephone; control and operating equipment for bow thruster unit; malfunction printer; central signal system board; equipment for checking on the person-on-duty in the engine control room ("Dead Man"). Also located in the engine control room are control consoles for remote control of the main engine, for the automatic power generator system, and for the complex engine control equipment. Installed here, in addition, is a central control desk for the ballast fuel and bilge systems with lighted circuit diagrams of the tanks and pipelines with fittings. The control positions, desks, and steering consoles are supplied by VEB Schiffselektronik Rostock.

#### 4.3. Radio and Navigational Equipment

The following radio and navigational equipment is available to the ship's command section:

- Medium to high frequency (Grenzwellen) and short-wave transmitters, medium-wave transmitter, all-wave receiver, short-wave receiver, electronic Morse key, teletypewriter, weather chart recorder;
- Emergency radio, VHF voice radios;
- Radar for the 3 cm and 10 cm bands, to be equipped from the third ship on with automatic plotting units for the prevention of collisions;
- Gyro compass system;
- Radio direction-finding (DF) equipment;
- Sonic depth finder and ship's speed indicator system.

Also on board the ship are telephone and command, radio and TV equipment.

**NEW TECHNOLOGIES AIMED AT CUTTING IMPORTS, PRODUCTION COSTS**

**Warsaw GOSPODARKA MATERIALOWA in Polish No 13-14, Jul 84 p 327**

[Text] Domestic Catalyst for Hydrotreating Post-Pyrolysis Gasoline

A nickel catalyst for hydrotreating post-pyrolysis gasoline which will allow a replacement of the catalyst imported from hard currency countries was built at the Wroclaw Politechnic. The production of the new catalyst is carried out by the Catalyst Factory in the Oswiecim Chemical Works. The hydrotreating of post-pyrolysis gasoline is made in our country exclusively on the basis of the imported LD-241 catalyst produced by the Procatalyse firm.

The Wroclaw Politechnic's Institute of Chemistry and the Technology of Kerosene and Coal has built a nickel catalyst for hydrotreating post-pyrolysis gasoline which is characterized by the same activity, selectivity, stability and mechanical resistance as the LD-241 catalyst. In building the catalyst the conditions existing in the Catalyst Factory of the Oswiecim Chemical Works were taken into consideration. The conditions for the activation, reactivation and regeneration of the newly built catalyst were also worked out.

The catalyst will be exploited in the first degree of hydrotreating post-pyrolysis gasoline, producing stable high-octane gasoline. Post-pyrolysis gasoline after processing on this catalyst can serve as a high-octane ingredient of engine gasolines or can be further processed to achieve high purity aromatic separates highly important in chemical synthesis. The use of the said catalyst will permit the replacement of the imported LD-241 catalyst in the installations of the Olefina I and Olefina II in the Refinery and Petrochemical Works in Plock. This will permit large hard currency savings. In the Catalyst Factory in the Oswiecim Chemical Works, 4 tons of the nickel catalyst were produced as a promotional amount, which was placed in the industrial installation of Olefina II in the Mazowieckie Refining and Petrochemical Works in Plock. The first stage of technological testing, including regeneration, was positive.

**Steps Toward Saving in Production Plants**

At the Adolf Warski Shipyard, the lowering of production costs was adopted as the main direction of action in the savings program. The first results in this domain are encouraging and optimistic. Introduced in 1983 in particular

work stations, permanent collection of postproduction waste yielded 24 tons of welding fuse-element, 158 tons of ferric oxide, 226 tons of post-welding scale, and 2 tons of mineral wool. As a result of appropriate lighting of work stations, 21,000 kilowatts were saved. Savings in the shipyard begin in the sphere of design and preparations for production. The new series of bulk carriers of 33,000 tons load capacity built for Polish Sea Navigation can serve as an example. These ships will be about 100 tons lighter and will burn 10 tons of fuel a day less. On the world ship market these are very important problems.

A computerized system of drafting the technology of coal enrichment designed by the Main Institute of Mining in Katowice is another very interesting undertaking. The essence of this innovative solution consists of creating a mathematical model of the modification process, while the whole complex procedure of numeric calculations, which as a result supplies the optimal solutions, is taken over by an electronic calculator. The originality of this method consists of, among other things, the possibility of establishing the best technological structure of the processing plant and the parameters of the work of its equipment, for the purpose of obtaining the maximum quantity of the concentrate of the desired quality.

The Main Institute of Mining concluded with the Separator Main Bureau of Research and Design of Coal Processing three contracts for the implementation of this system in mining. This system additionally serves to design a dozen or so projects offered to processing plants for foreign contractors. In the Stalowa Wola Steelworks Industrial Combine, the first domestically designed and built installation for electron-beam welding in high vacuum was turned over for exploitation. The unique welding machine is designed to weld above all in the vertical axis of gears with the baskets of clutches. This machine permits the achievement of joints 15 millimeters thick and the maximum diameter of the welded details can amount to 400 millimeters.

The first machine for electron-beam welding was produced in the Image Converter Research and Development Center in Warsaw, in the Research and Development Centers of Earth and Transport Machines, and in the Stalowa Wola Steelworks Industrial Combine. Until now similar installations had been imported from hard currency countries.

12270  
CSO: 2600/320

## POLISH CONSTRUCTION CONTRACTING SERVICES FOR USSR

Warsaw PRZEGLAD BUDOWLANY in Polish No 7, Jul 84 pp 361, 362

[Article by Andrzej Horynski, Lublin: "Export of Lublin Region Construction to USSR"]

[Text] The growth of construction in Poland in the 1970's was accompanied by a parallel growth of export of construction services to the first and second currency areas. In the Lublin region, this export started to grow in 1975, i.e., with the establishment of Construction Export Office in Lublin. The year 1977 was a turning point for construction export because a significant number of export offices in Poland were set up in that year.

Export offices deal with:

- the coordination and organization of construction material production and assembly and the services required for external and internal export; they act as general contractors;
- acting as a general contractor's agent in dealings with foreign trade centrals and subcontractors.

Despite the broad area of responsibility which those offices were awarded, most of them did not develop sufficiently the export of construction services, mainly because:

- the plans did not include that area of activities;
- a consistent personnel policy did not exist and the conditions were not conducive to attract export specialists in the organizations geared to promote export, especially those in the middle and upper ranks who would be interested in permanent upgrading of qualifications needed to support export;
- parochial attitudes in foreign trade central offices often led to the loosening of connections among those engaged in promoting export;
- when assigning export tasks, there was a lack of consideration for the achievements of future exporters;
- of applying to the export orders the same methods and principles which were used for domestic work, i.e., emphasis on quantity and delivery dates without considering economic results and the quality of product;
- of using the hard currency fund obtained from contracts as a rescue fund for units having currency problems but not necessarily participating in the export efforts, thus decreasing the interest in export among most enterprises.



The Export Office in Lublin serves as a field unit of the General Directorate of Energopol in Warsaw and operates under the name General Team for Export Promotion in Lublin. The main task of the team is to satisfy requirements for the construction of the Khmel'nitskiy Nuclear Power Plant in the USSR.

Exports for that construction are the result of an agreement signed by the governments of the USSR and Poland within the framework of the so-called raw material treaty. The result of work performed will be that Poland, starting in 1984, will receive electrical energy in mutually agreed quantities. The construction period covers the years 1979 through 1985. Currently, 2,000 Polish employees are working on the construction.

Construction of the Khmel'nitskiy Power Plant is progressing at the same time as the construction in Kursk and Smolensk and it produces good results as measured by two indices: labor efficiency and the cost of obtaining rubles. Primarily, this is due to the organization of construction work.

Analysis of the organization of work at these three power plants became the basis for transferring certain functions from the construction management to the construction directorate and for establishing central bodies for production preparation, supplies, personnel, contract accounting and storage management. This permitted the construction management to concentrate on technical and production matters, relieving them of administrative and bookkeeping tasks.

This organizational structure permitted the granting to the construction manager and his staff of autonomous authority over resources under his control. Those positions were considered the most important in the directorate and on construction sites, for they could affect the organization of effort and the results. Persons who are assigned to those positions are the appropriate specialists who have a fluent command of Russian; they are given broad decisionmaking authority and higher pay to provide an additional incentive to achieve even better results. A team of such specialists supervises the performance and assures that the work is done on time and in accordance with the plan, that the team makes the final decisions in matters which eventually will affect the performance and override the financial and resource consideration of the construction. The team decides in matters of budgetary expenditures and coordinates technical and organizational matters with the Soviet partners as appropriate.

In the construction site management office, because of the limited importance of construction element leaders, work leaders and deputy construction managers, the prestige of the foreman is greatly increased. The foreman, by keeping daily records of achievements and work progress, sees to it that the work is in accordance with the planned tasks, technically correct and qualitatively acceptable, and that the time and equipment are fully used.

The work is done using the system of multiskill brigades which emerge at the site by natural selection. The general contractor tries to create such brigades at home to be sent by a specific contractor abroad on rotation. The



proximity of the construction site to the frontier permits this solution as it is possible to send home employees having trades which are not required at the moment without the need to train them in other skills. The construction site management keeps the records of production. There is an effort under way to introduce the principle whereby the contracting is for a task rather than for labor services.

We should start thinking about future development and about creating a base for our construction services in the Soviet market. This market is of great importance to us because of its limitless opportunities for export of construction services, because we can test our technologies and technical solutions under the difficult conditions of the Soviet market, and because it provides opportunities to create multiyear operations using the same assortment of skills and technologies. Our aim in that market should be to propose the replacement of labor-intensive tasks with our new technologies and, conversely, to use in our own market the solutions that were tested by the Soviet experience.

Independently of developing the general and industrial construction services, there is an unexplored area for exporting to the USSR specialized construction services for which the technology is highly developed in Poland, such as:

- fireproofing of steel structures,
- mechanical application of plaster and stucco,
- painting, and many others.

In Poland, we have reserves of certain equipment and we should inquire whether there could be opportunities to offer equipment services.

It seems that the time is ripe to begin bold acquisition efforts on the Soviet market. The central and the northeastern regions are well situated to export construction services to the USSR and especially to the border regions because of:

- low transportation costs,
- availability of many skilled workers who have a good command of Russian,
- similar and closely related cultural characteristics,
- similar climate and food,
- easy availability of means of production and specialists required for good economic results,
- continuing collaboration among the cities in the border regions, e.g. Lublin and Brzesc [Brestlitovsk].

To assure a growth of construction services export in the future, it appears necessary to centralize the export assistance activities, because the multiplicity of small units deprives the effort of its breakthrough power.

The General Team for Export Promotion in Lublin has a considerable experience of many years of working in the new export field, it has an organization tested in the construction of Kmel'nitskiy Nuclear Power Plant in the USSR, it has the right personnel and it could perform well the coordinating role in exporting construction services from the central and northeastern regions.

## USSR 'ECONOMIC EXPERIMENT' RATED IN POLISH WEEKLY

Warsaw ZYCIE GOSPODARCZE in Polish No 45, 4 Nov 84 pp 1, 12

[Article by Eugeniusz Mozejko: "In the Forefront of Progress"]

[Text] Since the beginning of 1984 about 700 production associations and plants in the Soviet Union have been participating in an economic experiment. When I visited the USSR in the first half of September, I decided to follow the fate of the experiment. Once there, I also asked why the experiment had been undertaken, what the reasons were for choosing to make it at this particular time, and why the new and difficult undertaking was being initiated so energetically and on such a broad scale. The answer I heard was that it was nothing new in the Soviet Union to improve the economic mechanism. It is an ongoing process. Experimentation goes on all the time.

Indeed. Experimentation related to creating new mechanisms for the socialist economy has been going on right since the Great Socialist Revolution. Suffice it to mention the socialization of industry and the related organizational changes, the process of focusing the socialized plants. Back in 1929 there was the creation of what are called "socialist firms," which were a sort of industrial association of that time. During the 1960's some broadly conceived changes were made in the system of planning and administration. Many new instances of initiative in this area came in the 1970's. They increased beginning in 1979. The resolution of the Central Committee of the CPSU and the USSR Council of Ministers "On Improving Planning and Increasing the Economic Mechanism's Influence to Upgrade Production Effectiveness and Work Quality" dated 12 July 1979 became the basis for comprehensive changes in the economic mechanism.

Since that time the Soviet Government and the party have undertaken many new instances of initiative aimed at setting the economy on intensive tracks of development and the increased effectiveness of production. They have encompassed all the basic elements of the economic mechanism, from planning and administration to the rights and responsibilities of employee collectives in the workplace.

## Bold Step

This experiment is only one of the steps along this road, but it is doubtless a bold and important one. It reaches the very foundations of economic life, the enterprises and their working forces whose work ultimately determines the results. Nikolay K. Kramskoy, economic secretary of the CPSU district committee in Donetsk, describes its significance this way: First, the material and moral conditions were created to provide an incentive for the working forces to increase production and exercise thrift in using labor resources. The director may divide up the payroll fund among a smaller number of employees and lay off some workers. Second, the production associations and enterprises were given the possibility to expand production independently through their own funds or borrowed funds, and the firms involved in the experiment were given credit priority. These firms were also assured adequate supplies for their production needs.

The enterprises' independence is increased, and this is expressed in the reduced number of directive indicators to an average of six, a reduction of about 50 percent. They vary from one branch of production to another. The standard list includes: production size taking into account the fulfillment of delivery agreements, labor productivity, quality of goods, reduction in production costs, scientific-technical progress targets, and centrally financed investments.

The experiment, however, is not so much authorization and privileges as discipline, especially financial discipline. There is strict adherence to the ratio between payroll fund growth and the end results of production, according to Kramskoy.

## Principles

A few other pieces of information need to be added to this short description. Directly related to the expanded responsibility and authority is the reduction in the number of centrally monitored indicators, limits, and standards. This also means basic changes in the method of planning. The indicators required for the enterprises involved in the experiment are geared to the satisfaction of public needs, increasing the growth rate of labor productivity, and reducing production outlays. The economic standards set for the five-year period basically should not be changed. The production index for basic items is set in natural units for all those participating in the experiment. It also includes exports and new technology items. In the Belorussian ministry of light industry it includes high-quality new items. In the local industry ministry of Lithuania, it includes new items. The index for reducing production costs (with regard to the value of commodity production) is set for all the firms. All the firms engaged in the experiment, with the exception of those of Lithuanian local industry, receive a centrally approved index for the rise in labor productivity, but in the USSR electrical engineering ministry, the way it is set in the annual plan it takes into account the share of the economic effects enjoyed by the users of the new higher-quality technique. In the light industry ministry of Belorussia this index is calculated on the basis of the increase in standard net production or commodity production.

The basic targets in the realm of technical progress and labor management are only determined in the firms and industrial associations of the all-union ministry of heavy machine industry and electrical engineering industry. The annual plans also include the size of sales (as a basis for assessing whether contract obligations have been met), the amount of profit, and economic standards for deductions from profit to be contributed to the state budget.

The limit on the payroll fund applies only in the ministry of heavy machine industry. The others have an index of payroll fund growth for production employees calculated in terms of a percentage of the increase in labor productivity based on standard net production or commodity production. But they submit for approval the payroll fund for nonproduction employees and also for the working forces in plants which have recently been put into operation (in this case, they also submit the material incentive fund and others for approval too), as do the firms which process raw materials of farm origin.

Limits on investment outlays financed out of the state budget continue to be in effect for all the industrial associations and enterprises engaging in the experiment. Other indicators of the five-year plan and annual plan are set by the firms independently.

The firms of the heavy machine industry should receive along with the centrally established indicators (the so-called control figures) of the five-year plan lists of concrete items compiled on the basis of contract orders, because it is usually a question of large pieces of machinery, such as open-cast diggers, which have a long production preparation period.

The annual plans are drafted on the basis of the targets of the five-year plan, and they include contracts with customers. All the firms engaged in the experiment must obtain them sooner than before. The deadlines vary and depend on the specific nature of the branch, but basically the annual plan indicators should not reach the industrial associations and enterprises later than the end of the first quarter of the previous planning period. The indicators of the five-year plan may be changed at the level of the firms and industrial associations only in the event of basic changes in the conditions under which the firms operate. This applies in particular to the firms which process agricultural raw materials, the supply of which depends on the results of farm production.

The basic criterion for assessing the firm's operations is its meeting its contract obligations in terms of quantity, quality, and deadlines. In the enterprises of the ministry of heavy machine industry and electrical engineering industry one of the basic indicators in addition is the meeting of the targets for scientific and technical progress and for reducing production costs. In this ministry, as well as in the ministry of food industry of the Ukraine and the ministry of light industry of Belorussia, the index for improving technical level or product quality also applies. In three of these (with the exception of the Ukrainian food industry) operations are also assessed in terms of labor productivity and the mobilization of new



installations for production. The increase in profit is taken into account in assessing the enterprises of light industry (Belorussia), the food industry (Ukraine), and local industry (Lithuania).

#### In the Donetsk Region

The Donetsk Region is playing an important role in the experiment. Plants of heavy industry, electrical engineering, and many food-industry plants included in the experiment are located here. Getting the experiment going was difficult for the employees of those enterprises and the economic activists at all levels. Training of economic services in the ministries, the district, and the regions took place in 1983. About 150 industrial associations and enterprises are taking part in the experiment. After 8 months of work, the results are good. Only two of them are not meeting their targets, and Kramskoy points out that there are objective causes behind this. The established ratios between payroll-fund growth and production are being better respected. In all the enterprises a decline in costs and improvement in product quality have been noted.

The experiment is expanding under strict supervision. There are monthly reports (which of course those involved do not like much), and the activity of the enterprises is monitored by the financial bodies of the people's councils, the banks, and, in their own fashion, the party bodies, local and higher up. I asked Kramskoy how the people, the employees of the enterprises had taken to the experiment, and he told me that some were in favor and some less so. Then I asked about supply priorities, whether if when something did not arrive on time, causing the enterprise's results to decline, the enterprise could do something about it. He said that there were no sanctions. You get the impression that supply is not one of the easiest aspects of the experiment. The same applies to the production capacity of the construction enterprises, through which the enterprises involved in the experiment would like, for example, to carry out their modernization plans. The secretary admitted that it is difficult to place such orders.

Zhdanovtyazhmash in Zhdanov, the production association for heavy machinery, was the next stage in my becoming familiar with the experiment. Along with the plants that comprise it, it is one of the industrial giants of Donbass. It produces various sorts of castings, 160-ton gantry cranes, 50-450 ton convertors, mining machinery, including diggers for open-cast mines with a capacity of 2,500 cubic meters per hour, atomic fuel transport containers, and various sorts of nonstandard equipment, as well as freight cars. It is the only Soviet producer of railway tanks (40 types; some types of tank bodies are exported, and some of these to Poland). The association has its own scientific-research institute and design bureau.

Preparations for the experiment began in August 1983. A plant commission and nine-member party group were formed to handle the introduction of experimental principles of operation. Seminars and meetings of social organizations were set up. At these meetings the goals and principles were explained. With this in view all the training programs were looked at. Half pertain to ordinary economic subjects. Five additional subjects about the experiment were



introduced. A comprehensive program of implementing steps was elaborated. The commission is actually continuing to work, following the course of the whole undertaking and "working out" additional material for various elements of it. The employees made many suggestions, but Valentin V. Butyryn, the secretary of the association's party organization, says: "We can already say that we have been successful. For the first time in many years, the association made all its contract deliveries, and labor discipline improved. We can still feel the shortages in supply." ("We did not get anything extra," the chief engineer of the association interjects. "We need to have the mill workers get into the experiment too.")

## Results

Nonetheless, the results for the 8 months that the experiment has been in progress are good. First of all, labor productivity: an increase of 7.4 percent compared to the planned 4.5 percent. During the same period, production increased by 6.8 percent, including a 12-percent increase for high-grade equipment. The results for the first years of the 1980's were far weaker. The material incentive fund for this period worked out to about 7.7 million rubles in the association. Six percent of the profit was allocated for the association development fund.

B. F. Shuvalov, deputy director of the planning and economic department, says that the index for meeting delivery contracts is considered one of the most important. Second place would go to reducing production costs. The material incentive fund is increased 2 percent for each percentage point of savings. Among the most important tasks in the view of association activists is the inculcation of new technology. Altogether, under the experiment the number of indicators in the plan has been reduced from 80 to 12.

What sort of new privileges are most important from the viewpoint of production practice? The right to set wages individually. This can reach 250 rubles per month. So far six employees have received this rate (the mean is about 200 rubles). And to give supplements for high qualifications. Such additional amounts were given to 3,100 employees, including 17 engineers, nearly 60 economic administration employees, and many foremen. They can reach 50 percent of the basic wage.

Much has changed and is changing in the realm of the organization of work. I receive information on this subject from the head of the forge and press department firsthand. The brigade system of wages and remuneration is being popularized. This is not entirely new. It was in this very department that the first brigades were born much earlier, before the experiment began. Important are the organizational changes based on the new principles of remuneration. They incline people to form comprehensive brigades oriented to achieving a certain end result. A bonus of 20 percent is given for the completion of the tasks undertaken. Along with an improvement in the results of work, this can rise to 45 percent. Brigade members receive their share according to the set index of work contributed. The mean pay in such a comprehensive brigade is 216 rubles, compared to the association average of

196 rubles. The task is designated a day ahead to make it possible to set up the course of production. The department head has available a bonus fund for participation in work competition and for the completion of specific tasks. In effect, the end results of the work become important to each employee.

Another of the important symptoms that the experiment is working is the improvement in interdepartmental cooperation. Penalties are envisioned for cooperation failures which degrade the results of other departments. The chassis production unit (24,000 units), which supplies eight other departments, is an experienced hand at cooperation. The brigade system of organizing work, the threat of sanctions, and, above all, the awareness that the results and earnings of many colleagues are at stake, have produced visible improvement in regularity of deliveries made according to a monthly schedule.

Can we say anything else about the complete success of the experiment at Zhdanovtyazhmash? The assessments by the management activists' group are cautious. The experiment will surely produce good results, but it will be several years before we can talk about success. There are issues which still create doubts. For example, what will the drafting of the next five-year plan be like? Up till now (the middle of September) the associations do not know what is going to be supplied to whom during the next five-year period, and it takes a long time to prepare for production. Operating conditions have changed, but the report-keeping has not been reduced. Of course many employees think that the influence of the material incentive fund should be increased, which would mean a higher deduction rate.

I also had an opportunity to become familiar with experiences related to the economic experiment in several plants of the Donetsk food industry, a candy factory, a large bakery, and finally a salt mine in the town of Artyomsk. Despite relatively short deadlines people managed to carry out the tasks without disruptions, and undisputed progress everywhere was made in two areas: improving the fulfillment of contracts and substantial acceleration of labor productivity. The party activists' group of the plants involved, the district committees, and the regional committees played a great role in getting the experiment ready and implementing it. They carry the major responsibility for the success of the undertaking. Scientific institutes like the Institute of Industrial Economics of the Ukrainian Academy of Sciences in Donetsk monitor and evaluate the experiment. It was here that the first reports were prepared for the USSR Academy of Sciences and regional officials. The institute's scientists could state that the plants and associations operating under the experiment usually achieve better results than the others. There was clear improvement in the discipline of carrying out contracts and also in production supply and the transport service of the plants. There are also shortcomings: the reduced production-plan indicators do not reach the enterprises involved soon enough. Further changes are needed in the planning system. In the scientists' view it would also be good to revise the principles of creating the enterprise funds to bolster their impact on thrifty use of production factors. The first two suggestions

will surely need more exact examination. It is to be imagined that some sort of corrections will be introduced as more experience is gained, but even today there is no doubt that the basic assumptions of the experiment are proving themselves in practice. Lubov A. Busyatskaya, from the Soviet ministry of heavy machine industry, with whom I talked in Moscow after my series of visits to the plants, was of the same opinion. She thinks that under the conditions of the experiment the enterprises cooperate better and more closely with the consumers of their production. After receiving the basic indicators of the plan (they were sent to it as of 1 September), the enterprise must decide on the exact item assortment it will produce, on the basis of agreements with customers, and 2 months before the New Year it must make the corresponding contracts with them and with its suppliers. The sales departments in associations and enterprises have also become stronger. As we might imagine from the director's statement, further improvements still need to be made in working out the plans and activity of the supply services.

#### The Experiment Is Expanding

Beginning 1 July 1984 the experiment entered service enterprises of the RSFSR. In this case too there was a substantial reduction in the number of central indicators, which is equivalent to increasing the independence of the enterprises. The only thing set from the top is the value of services, along with services rendered in rural areas and services for the population, standard deductions from profit, and standards for creating the payroll fund and the material incentive fund. This latter is often made to depend on the amount of services sold to the population and is aimed at bringing about substantial improvement in this area. In the bonus system sanctions have been envisioned for worsening quality and culture of service, violation of deadlines, and so on. In such instances the bonus will be taken away not only from the employees directly responsible but also from their supervisors at higher levels.

Two funds are created in the associations out of the profit remaining in the enterprises: the production and social development fund and the bonus fund. The role of this index is rising substantially, despite the fact that it is not one of the centrally approved economic standards of measure. The working forces of the enterprise themselves determine the ways the development fund is used.

Beginning in 1985 another 23 branches of production, including seven of all-union scope, will go over to the new principles of operation based on fewer central plan indicators and fixed economic standards. This will mean a great expansion of the experiment which was begun with a relatively small group of enterprises, designated to play a leading role in developing the Soviet economic mechanism. People are already saying that beginning with the next five-year period these new mechanisms will be introduced throughout the national economy.

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CSO: 2600/312

SUMMARY OF SOVIET EXPORTS TO POLAND IN 1984

Warsaw ZYCIE WARSZAWY in Polish 13 Nov 84 pp 1, 4

[PAP report: "Soviet Goods Are Delivered to Poland at a Steady Pace"]

[Text] Leslaw Kolijewicz, PAP correspondent, informs us that the Soviet Union is delivering raw materials and other goods to Poland exactly as it has undertaken. In some cases, it has already fulfilled the trade agreements for 1984.

The totals, as of 31 October, indicate that Soviet exporters have completed their annual deliveries of passenger cars (4,072 cars, including 3,010 Ladas), black and white television sets (50,000), and consumable wheat (600,000 tons). Also, the deliveries of brandy and champagne have been 100 percent completed.

In the past 10 months, delivery of the majority of industrial goods was made ahead of time. Among them, the annual delivery plan of radio receivers was 98 percent completed, bicycles--87 percent, cameras--92 percent, sport items and camping accessories--84 percent, kitchen utensils, table settings and domestic chemical items--83 percent.

In November and December, deliveries of refrigerators, color television sets and Wiatka automatic washing machines will be increased.

Also, deliveries of tea will increase; by the end of October we had received 3,128 tons and we are supposed to receive 5,000 tons total. Deliveries of rice will increase too; according to the supplemental agreements, we will buy 50,000 tons of it from the USSR.

Deliveries of raw materials for our economy were coming at a steady pace from the beginning of the year. Among them, as of the end of October, we received 360,000 tons of crude oil, which amounted to 100 percent of commitment for that period of time. Also deliveries of natural gas were completed--we received almost 5 billion cubic meters. Gasoline was delivered ahead of time. Additionally, we received during that time 11,211,000 tons of ferrous raw materials.



This year, we purchased in the USSR 111,000 tons of cotton. As of the end of October, deliveries amounted to 77,000 tons, i.e., 108 percent of plan for the 10 months. In November and December, cotton from the new harvest will be coming in large quantities. While talking about highly satisfactory fulfillment of commitments by our Soviet partner, it is worthwhile to mention delivery of agricultural machinery and industrial equipment to our country. By the end of October, the USSR had delivered the annual orders for Komplex beet loaders. Also ahead of time was the delivery of tractors. For example, the most sought-after tractors, T-25a, were delivered in the quantity of 8,524, which amounted to 115.2 percent of deliveries planned for that period. Also ahead of time were the deliveries of looms for Polish light industry (99.2 percent of the annual plan).

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## ENERGY DELEGATION IN HELSINKI REVEALS POWER EXPANSION PLANS

Helsinki HUFVUDSTADSBLADET in Swedish 21 Nov 84 p 13

[Article by M.K.: "Poland's Energy Needs: Brown Coal, Nuclear Power Get Larger Share"]

[Text] Poland is expanding its coal production and also has comprehensive plans to build nuclear power plants to meet the increased domestic demand for energy. At a briefing held at the Polish trade legation in Helsinki on Tuesday to commemorate the miners' traditional festival and mark the 1 billionth export ton of coal since the war, it was announced that an austerity policy was being observed which favors coal.

At the briefing held by Energy Minister Janusz Bojakowski and Jozef Stachon, managing director of the Weglokoks export enterprise, it was predicted that the importance of coal would resume growing during the next century.

Seven new mines are now under construction, and when they are in operation annual production will increase to 195 million metric tons. During this year the extraction of coal is expected to total around 191 million tons, of which approximately 43 million tons are for export.

The peak production of 201 million tons occurred in 1979, i.e., before the political crisis in the country. At that time, export rose to 41 million tons. In 1980, this was down 15 million tons.

When Finland imported most of its coal from Poland, the amount climbed one year to around 4 million tons. This has now dropped to approximately 2.3 million tons, due partly to decreased demand and the fact that we have resorted to multiple suppliers. Long-term agreements for around 4 million tons annually are still in effect, however, Finland now imports around 1.2 million tons from other sources, including nearly 1 million tons from the Soviet Union. Polish sources said yesterday that they are of course prepared to sell more to Finland.

It was disclosed that Rautaruukki 6 months ago discussed the possibilities of buying coke. It was announced that the sale was ready.

As regards the future, it was revealed that some COMECON countries have expressed interest in working jointly with Poland to extract the large coal deposits located chiefly in the eastern part of the country.

ECONOMIST EYES CONFLICTS OF INTEREST BLOCKING REFORM

Warsaw ITD in Polish No 50, 9 Dec 84 pp 16-17

[Interview with Professor Dariusz Rosati, economist and staff member of the Institute for Foreign Trade Economics and Policy, Main School for Planning and Statistics, by Piotr Gadzinowski; date, place not given]

[Text] [Gadzinowski] The third year of the economic reform is almost over and there is seemingly evidence of the reform around...

[Rosati] The evidence is in the calendar rather than around...

[Gadzinowski] Exactly. The poor results of the reform raise many reservations as to the usefulness of its further implementation. One hears opinions that the reform cannot be implemented in an economy which for over 30 years functioned on totally different principles and whose structure is foreign to the reform.

[Rosati] So far the situation is not yet so bad as to turn society off the reform. The criticism has a twofold basis. Usually the results of the reform are confused with the results of the current economic policy, yet those are two different things. With regard to the reform, despite many reservations one can have about it, the basic, decisive batch of laws regulating the economic policy has been implemented. The current economic policy, on the other hand, raises many reservations.

[Gadzinowski] Was it necessary, however, to introduce new principles of the functioning of the economy when other socialist countries only introduce the necessary modifications rather than reform the old system? For this reason the economic situations of Bulgaria or the GDR are enviable.

[Rosati] We must remember the other trend of criticism and its basis. The reform infringes on the interests of social groups whose power in the command-directive system had a broad scope. Similar voices can now be heard from some people in the apparatus. They say that the reform is of no use and that it is time to return to the old, tested system. All these critics forget, however, that we have been improving and modifying the old system for nearly 30 years and the results of these efforts have been increasingly worse. The frequently cited positive examples of Bulgaria and the GDR are simply pointless. The Bulgarians' undoubted economic successes achieved in the past few years have

been tied precisely to the departure from the old system on behalf of parametric solutions. The GDR is a specific example. We cannot compare our economy to that of the GDR. Besides, despite its economic stabilization, the GDR's dynamism of growth leaves much to be desired. In my opinion there is no turning back from the reform. It is the future direction, a transition to a new stage of socialism.

[Gadzinowski] This sounds convincing. Nevertheless, so far we have not had success with the reform either.

[Rosati] Let us remember that we began the reform in the worst moment of the economic crisis inside the country and sanctions and restrictions outside. To this one must add the unfavorable political situation--the society's lack of trust in the authorities and the general lack of involvement.

[Gadzinowski] There are opinions that during martial law the government could have speeded up the implementation of the principles of the reform by using special rights, thus eliminating the generally criticized transitional period.

[Rosati] I sympathize with this view, although I do not agree with it fully. The transitional period must take place, but martial law could have been used to shorten it. Today the authorities believe that it must be very long. I do not agree with this. We have been waiting too long for the unblocking of the mechanisms of the reform. We have a law on prices and on the rate of foreign exchange, but their principles have not been implemented. This results from excessive caution and divergent interests within the authorities.

[Gadzinowski] Just a moment, let us decipher the term "authorities." We say "authorities," but we think of..."

[Rosati] Despite the prevailing opinion, the authorities are not monolithic or unanimous. Undoubtedly, in the Politburo prevails the conviction about the necessity of implementing the reform. On the other hand, a part of the central administration, ministries and some central offices and branch ministries in many cases impede the implementation of the mechanisms of the reform, particularly those which give independence to enterprises. The reform limits the scope of their power and forces a change of their function in the reformed economy. Thus despite political will, the implementation of the reform is very difficult.

[Gadzinowski] But can such a small group block the reform so effectively?

[Rosati] We should not attribute demonic powers to them. Nevertheless, let us remember that it is precisely those people who in practice are to implement the reform in the form of legal acts, instructions and ordinances. They decide on its real form. That is why they are such a strong group.

[Gadzinowski] In this situation, will it not be necessary to eliminate all branch ministries and replace them with one ministry of industry?

[Rosati] The best solution would be to create a ministry of industry and foreign trade. At issue here are not only structural, but also functional changes. A ministry would be an organ of the general staff. It would cease to give direct orders, and would occupy itself with the planning of development and the technical progress.

[Gadzinowski] There also remains the problem of appropriate jobs for the people from liquidated ministries... On the part of the enterprises, however, we do not see major reforming activity either. Please note how few directors look for help in those mass media, which are clearly proreform and whose voice is sufficiently audible. I think that for many directors and local political activists the reform additionally disturbs their already upset lives.

[Gadzinowski] Those with traditional concepts of the party probably also will fight the reform. Party organizations can in some cases lose direct influence on the enterprise's personnel policy or program of development. Now, however, activists must learn to persuade rather than direct. They must display professionalism and set their stakes on professionalism. We cannot expect that within 3 years human habits and mentality will change. We can hardly expect that a director who continues to see his advancement in a transfer to a ministry position will complain to journalists about the minister. Some time must pass for that. Nevertheless, there are a number of problems which the economic authorities have failed to solve, although they could have. It is this delay which causes that the reform does not yield expected results.

[Gadzinowski] What exactly has not been solved so far?

[Rosati] We have already said that the structure of the central administration has not been reformed. Structural changes in the economy are also being carried out sluggishly.

[Gadzinowski] Is it actually possible to carry them out?

[Rosati] If one made a consistent use of the instrument of the insolvency of enterprises...

[Gadzinowski] Then you know which enterprise would have to be closed first?!

[Rosati] Yes, I have heard this example: the Gdansk Shipyard. Let us understand each other well, however. The point is not to close an enterprise, but to improve its health over several years. Let us not be afraid to say to some enterprises: "You are not profitable, society can subsidize you for a few more years but in the meantime you must reconsider what to do next, how to change production in order to make it profitable. If it does not pay for you to make ships, make something else: scythes or hammers--to make your enterprise profitable."



[Gadzinowski] Not all of the people employed there can produce those hammers, however. The phantom of unemployment would appear!

[Rosati] We cannot treat insolvency and unemployment in the same sense in which it is treated in the capitalist economy. Complete bankruptcy and kicking people out will not take place, but rather there will be a change of the function and of the use of social property. The enterprise will have to change the profile of production. Its employees will either remain and change their qualifications, or will have to leave for other work. There are funds, the FAZ [Vocational Activization Fund], for example, which will make such operations possible. We know that the right to work is a permanent gain of the working class in our system. It is, however, a right to socially useful work. Everyone can have a number of choices of employment, but cannot have irrational employment. After all, the socialist system is to be rational and scientifically formed. It is a system which economically can be much more efficient. The work force of an enterprise must have the awareness, however, that everything is in its own and the management's hands. Together they must establish a program which would be profitable for the enterprise.

[Gadzinowski] Then we may face the danger of another model of development of the economy, one in which all large enterprises begin to produce that which is currently most profitable: scythes, sickles, and hammers. For the following 10 years our production expectations will not rise above elegantly produced hammers.

[Rosati] Let us not exaggerate. If it is profitable for others to produce modern, complex products, why would it not be profitable for us? There are countries with similar economic structures as ours which successfully compete on world markets.

[Gadzinowski] They have, however, access to other markets and other sources of raw materials.

[Rosati] We can always enter those markets. First, however, we must have a functioning system of prices and of foreign exchange [rates] which is the basis for a parametric management of the economy. The price and the foreign exchange rates decide the profitability of production. Those, however, are the weakest points in our reform. A rate of 123 zlotys to a dollar is too low. (...)

[Gadzinowski] With higher exchange rates, however, the production of many goods, for example, the already antiquated Polonez passenger car, would be unprofitable and another gigantic enterprise would qualify for closing down.

[Rosati] And do you know what is the percentage of the turnover tax in the price of the Polonez?



[Gadzinowski] Seventy percent?

[Rosati] No, 100 percent. The costs of producing the FSO 1500 Fiat amount to 470,000 zlotys. The rest is turnover tax. As you can see, this is a large reserve. Let us not be surprised, therefore, that we are producing such material-intensive and outdated cars. Why save or modernize when raw materials at such a low rate are cheap. In our country raw and other materials are too cheap with relation to the ready goods. Foreign exchange, which is the most desirable commodity in our country, is at the same time very inexpensive. So why bother to save it?

[Gadzinowski] Since there can be no reform without realistic prices and rates of exchange, what prevents us from making them realistic?

[Rosati] The basic obstacle in introducing parametric functions of prices is the fear of simplistically understood inflation. The rise of the rate will cause the rise of the prices of goods. The authorities' negative experiences with social reactions to price increases causes the authorities to fear such an operation. They undertake, therefore, an impossible task--to balance the market with nearly immobile prices. No one, however, will produce more despite the most ardent appeals in a situation when such production does not pay; when the current economic policy limits the calculus of effectiveness, when it deforms proportions in the economy and the incentive functions of incomes and wages by an excessively severe tax policy, the PAZ and the like. In the present situation we must bring about the prices of balance. Unfortunately, prices must go up, there is no other way. We must learn to live for some time with inflation in order to get rid of it altogether. Of course, we must also learn how to protect the neediest.

[Gadzinowski] The actions which you suggest certainly will bring about a considerable decline in the standard of living.

[Rosati] For a short while only, and certainly not in such a degree as it appears now. Today, when something costs 100 zlotys and is unavailable in stores, while it can be bought at the bazaar or from a speculator for 500 zlotys, it means that the real living standard has already declined. This precisely is the uncontrolled inflation on which speculators and intermediaries make money.

[Gadzinowski] There are other negative sides to your proposals. Continuous inflation may cause a panic on the market, people will stop saving and will devote all of their incomes to buying, which may lead to a collapse of the market.

[Rosati] Let us not exaggerate. We are not threatened with hyperinflation. Let us remember that there are countries such as, for example, Argentina or Brazil, in which inflation reaches 100-200 percent a year. Nevertheless their economies are functioning. Many mechanisms have been invented, revalorization, for example, which can induce people to save. In our country the inflation gap can be liquidated by increasing production or limiting demand. Unfortunately, instead of liquidating the barriers to the growth of industrial

production, we administratively maintain prices, the categories of justified costs, and the limitation of profit. No wonder that enterprises do not want to increase their financial results since the FAZ would take them away from them. They have no encouragement for an innovational, proexport effort. In our country it does not pay to take any risks. It pays to do the same thing as before, not to stick out from the mass of similarly working enterprises.

[Gadzinowski] But such an economic policy cannot remain in force for too long?!

[Rosati] Of course not. Nevertheless, we still have the yearly planning period, though long-range planning was to be one of the goals of the economic reform. We still believe in continuation as the best method.

[Gadzinowski] Can we define at what stage of the implementation of the reform are we today? Nearer to, or further away from, the desired model?

[Rosati] Since the end of 1982 many specific "improvements" have been introduced and a retreat from many issues has been taking place. The usual explanation is that "for the time being the conditions are too difficult for the reform to fully function." Now we see what mistakes have already been made. In 1982, prices were sharply hiked, thanks to which we achieved a positive change in their relation. Immediately after that, however, wages were increased, various compensations were given and the whole price operation stopped having any sense. Today we are closer to the critical point in which economic results can be so worrisome that radical solutions will be necessary. The value of the export of our machine industry has been declining for the third year in a row.

[Gadzinowski] Does the situation need to get this bad, however, in order to unblock certain reform mechanisms?

[Rosati] I wish it were not so...

[Gadzinowski] There is an "optimistic" variant. The international situation improves, we receive new credits and prevent the reform from being further implemented.

[Rosati] There alternative is: either radical solutions and a full reform, or the annual growth of only 2 percent. Even though we now have a 6-7 percent annual growth of industrial production and 4 percent growth of national income, a steady decline in the quality of production has been taking place. Let us remember that our population is growing by 1.2 percent a year and the debt servicing will take up about 1-2 percent a year. This shows that we must have a minimum of 3 percent of the annual growth increase if the national income is not to continue dropping.

[Gadzinowski] I admit that this is not an enticing vision for the young generation.

[Rosati] Exactly! Such a vision cannot thrill. The reform must create models of careers, give the young generation a possibility for personal and professional success: possibilities for someone who works well, is energetic, resourceful and honest, to earn for an apartment and a car, without having to work abroad, wait 20 years for an apartment in a housing coop and save 10 years for a car in the hope of winning a small Fiat. Without new career models we shall not overcome the crisis.

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INDUSTRY THINK TANK REPORT ON CAPITAL CONSTRUCTION

Warsaw PROBLEMY ROZWOJU BUDOWNICTWA in Polish No 3, 1984 pp 1-8

[Article by Witold A. Werner and Elzbieta Wezyk, staff members, Institute for the Study of the Organization, Management, and Economics of the Construction Industry (ORGBUD): "Report on the State of Capital Construction"]

[Text] Conference and press discussions show a considerable lack of understanding of capital construction problems, even among specialists. This is partly the result of insufficient statistical data and partly the erroneous interpretation of existing information and occurring events.\*

This lack of understanding, in turn, leads to decisionmaking which ignores actual conditions and perspectives of capital construction in the national economy under reform. Pro-investment models continue to be extremely popular and have a strong influence on decisionmaking in Polish society.

It was precisely the excessive tendency to invest in prior years which was one of the basic causes of the profound economic unbalance as the 1980's began. The pressure to invest in capital construction came from almost all the economic, social and political organizations, who felt that a growth in investment would be the most certain means of accelerating economic growth. The pressure of various lobbies, both at the local and ministerial level, in the "open plan" system, the financing of the primary portion of capital construction out of central funds, and the lack of effective control and enforcement of accountability for investment results, brought about the present complicated situation in investment.

Excessive commitment of investments, particularly in industry, the wrong structure of investment, the failure to renovate fixed assets, the long implementation cycles, the low effectivity of endeavors which had been undertaken, and the inadequate utilization of existing means, made it necessary to verify the decisions made in prior years and stop work already in progress.

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\* This article constitutes a discussion of a report published by the institute in June 1984. The following team prepared the report under the direction of W. A. Werner: T. Jaworski, J. Krawczynski, Z. Lesniak, E. Wezyk and I. Zajac.

Reformations in the functioning of the national economy, and in investment decisionmaking, have made it possible to resume work on some of the jobs that were stopped. They have been taken over by organizations which have their own funds and adapted to new uses.

It became an important social and economic problem to identify the investments which had been deferred, to evaluate them and to determine what could be done to resume work on them under present economic conditions. This required specialists in the field of investment and construction: organizers, engineers and economists.

Council of Ministers' Resolution No 125/82 dated 31 May 1982 on the assignment of deferred investments, and Resolution No 120/83 dated 16 September 1983 on starting work on deferred investments or dropping them, gave ORGBUD the job of serving as an information-advisory center on utilization of investments which were deferred or were to be materially changed and reassigned.

Materials collected by the institute and reports from the Main Office of Statistics and the Council of Ministers' Planning Commission were the basis of the "Report on the State of Capital Construction," intended primarily for institutions handling investments or planning to handle them and for offices which create the mechanisms and instruments for controlling investment activity.

#### Origins of the Investment Situation

A number of internal and external factors contributed to the present situation in investment. A strategy of accelerated development, while numerous defects existed in the system for managing the economy, could not prevent unfavorable structural aspects. Rational proportions of the division of national income, the renewability of fixed assets, investment promotion and commitment, and the reasonable limits of the cycle of the implementation of investments and the attainment of projected results, were violated.

International comparisons show almost in all countries in recent years a drop in the share of accumulation (and consequently, in investment) in the divided national income. In Poland this share fell from 36.7 percent in 1974 to 21.6 percent in 1982.

Industry's share in the investment outlays of the European countries fluctuates within the limits of over 30 points, while in the socialist countries it is generally higher than in the other countries. The largest drop in industry's share can be seen in Poland: from 42.2 percent on an average during 1971 to 1975 to 36.3 percent in 1982.

As compared with 1978, in which investments were the highest, the drop in investment outlays in the socialized economy in 1982 was 50 percent, and in the socialized industry it was 54.1 percent.

Of total outlays for socialized industry in 1982, 74.9 percent were in the processing industry.



As shown in the "Concepts of the National Socioeconomic Plan to 1985 and the Preliminary Assumptions for 1986-1990," published in 1983, in 1990 the investment per one inhabitant, taking into account the anticipated population growth, will be about 60 percent of the pre-crisis level.

Observation and examination of the postwar developmental policy, particularly that of the 1970's, leads to the conclusion that the renewability of production means has been clearly neglected. While an enormous flow of outlays was directed at new investments, the existing assets depreciated, were not modernized, and a decline in productivity resulted.

On the other hand, the distinct preferences given to direct-production investment caused large gaps to appear in the technical infrastructure (power facilities, water management, transportation, communication, environmental protection, etc) and the social infrastructure (housing, health service facilities, buildings for culture, education, etc.).

The basic instrument for guiding the process of the renewal of fixed assets is amortization policy, which by shortening the operating periods of fixed assets "forces" them to accelerate the wear cycle and "tends" to replace them more frequently. Under international quality and price competition, the operating period of machinery is constantly being shortened, just as is their replacement, or modernization, period.

Therefore the ability of industrial facilities to adapt in order to introduce technological innovations in the form of modernization investments becomes an ever-increasing problem. During 1971-1975 the share of modernization investment in industry was an average of 15 to 17 percent of the total of expended investment outlays. For comparison, in the highly developed Western countries over 60 percent of total investment outlays are allocated for this purpose.

The average consumption of fixed assets in socialized industry during 1975-1981 grew from 34.8 percent to 41.1 percent. It is estimated that in 1985 this coefficient will grow to 50.5 percent. At the present level of investment even the allocation of all funds for the renewal of existing assets will not prevent their depreciation, because these funds are smaller than the regeneration-modernization needs.

The decline in the productivity of fixed assets, the incomplete utilization of the production capacity of the majority of existing industrial plants (also temporarily due to shortages of materials and energy) suggests that there must be a drastic reduction in the share of new investments (aside from those of special priority) and the share of modernization in investment policy must be increased. However, it must be noted that modernization of very old plants is often impossible from the technical standpoint, or is actually economically inadvisable. In such cases, the promotion of modernization investment is unprofitable and it is advisable to replace them with new production facilities.

The state of advancement (capital lockup) and the commitment to implement construction begun in past periods has a basic influence on the future of capital construction. By capital lockup we mean the amount of investment outlays for capital construction which has not been turned over for operation, whereas by commitment we mean the amount of outlays which must still be made in order to complete the construction already begun and put it into use. During 1971-1978 the share of capital construction turned over for operation in the total capital-construction outlays dropped in Poland (just as it did in other socialist countries), from 92.4 percent to 84 percent.

The ratio of commitment of capital-construction outlays in relation to a year's outlays, which determines the theoretical number of years necessary to complete the construction begun (without beginning any new constructions), deteriorated from 2.0 in 1975 to 7.4 in 1982. The ratio of freezing of investment outlays to a year's outlays (the index of uncompleted construction) was 111.2 percent in 1975 and reached 230.2 percent in 1982.

It is paradoxical that as construction obtained newer and newer equipment, the investment implementation periods became longer. The average actual implementation period of capital-construction tasks turned over for operation in 1982 was 47.1 months, which was longer (under comparable conditions) by 16.8 months than in 1975. The average actual period of industrial investment in the socialized economy was as much as 64.1 months in 1982, 16.5 months longer (34.7 percent) than the contractual period. Scarcely 29.7 percent of the investment tasks in industry were implemented within the contractual period; 3.6 percent were implemented in shorter periods, while 66.7 percent took longer.

An examination of the reasons for the extended construction periods, conducted at ORGBUD in the early 1970's, showed that the main cause was the lack of preparation of the investment for implementation.

In industrial investments the construction period was extended due to the following:

- in 30.3 percent of the cases, because of errors, changes and delays in programming the investment,

- in 31.7 percent of the cases, because of errors, changes and failure to develop the designs on schedule,

- in 18.3 percent of the cases, because of disruptions in deliveries of capital-construction machinery and equipment,

- in 3.7 percent of the cases, because of other reasons outside the control of the contractor, and only in

- 16 percent of the cases, because of reasons directly under the control of the contractor.

The above figures emphasize the important part that design and pre-design work plays and its effect on the efficiency and results of the investment process.

Investment activity in industry differs from investment in other sectors (for example, housing, education, culture) in that the planned results in specific buildings are not always achieved or are achieved with considerable delays in comparison to planned schedules. The official results of investment in industry are evaluated and measured according to the degree to which the planned production capability is achieved in an anticipated period.

An important factor in the failure to achieve the planned results was the improper preparation of the technical and economic assumptions and also the failure of the overall-plant operation facilities to be ready: energy, warehousing, transportation, repair management, etc.

The studies conducted confirm the great importance of well-planned startups and the advisability of shortening the construction implementation periods and the periods for attaining planned production capability. These periods are also definitely shorter in the case of modernization investment.

Despite the fact that as a rule modernization is more economically effective than new capital construction, the share of modernization investment in construction in industry was scarcely 14.9 percent in 1982, which was 6.8 percent lower than in 1981. However, modernization investments exceeded the other investments by 2.4 points if we consider the percentage of investments which were expected to be completed in 1982.

It is very difficult to determine the average delays in attaining planned results (planned production capabilities) and the reasons for them because of the average low level of utilization of production capacity in almost all of industry. They are considerable, despite the fact that the planned periods for attainment of full results are already far too extended.

The situation, as analyzed, constitutes an important premise for the formulation of new criteria for planning and implementing investments in which the time for attaining planned results should play a fundamental role.

#### Verification of Capital-Construction Decisions

The deteriorating unfavorable investment situation has made it necessary to verify the investments that have been made, from the standpoint of adapting them to the current requirements and capabilities of the national economy.

Action to defer investment was begun in late 1980 by Council of Ministers' Resolution No 133/80 on "Adapting the Structure of Investment to Investment Capabilities in 1981." Successive Council of Ministers' resolutions and directives from the chairman of the Council of Ministers were a continuation of the process of putting the investment situation into order. This process can be divided into two stages: the first covers 1980-1982, the second covers 1983 and the first quarter of 1984.

In the first stage the basic criteria of verification of investments were the continuation of tasks tied to socioeconomic priorities and their state of advancement, the degree of urgency for satisfying these needs by way of investments, etc. During this stage a number of decisions were made aimed at adapting the structure of capital construction to implementation capabilities in the following years.

In 1983 the National Socioeconomic Plan for 1983-1985 was prepared, which describes the decreased ability of the national economy to make investments during the period of the ongoing crisis. As a result of this, it became necessary to conduct another verification of investments. By Order No 11 of the chairman of the Council of Ministers, dated 8 April 1983, an interministerial team was appointed to review and verify the investments which had been deferred. The activities of this team began the second stage of the reduction of investments.

During the second stage, verification was conducted from the standpoint of:

- the economic or social justification of the advisability of reinstating the capital construction,
- the possibility that it will be efficiently operated after it is completed,
- the degree that construction has advanced and a realistic assessment of the availability of engineering and equipment to complete it,
- the technical state of the buildings erected and the accumulated machinery and equipment, taking into account the effects of the past and anticipated periods of interrupted implementation,
- the necessary costs to safeguard the work and maintain the construction site until the investment is reinstated, and the effect of these costs on the total cost of the investment and its effectiveness.

The consequence of Order No 11 was the appearance of Council of Ministers' Resolution No 120/83 on the further implementation or liquidation of deferred investments. Annexes to the cited order named 953 capital-construction jobs, including 452 which were to be continued (47 percent of the listed jobs), and 501 which were to be dropped.

Council of Ministers' Resolution No 120/83 preserved the validity of the earlier Council of Ministers' Resolution No 125/82, dated 31 May 1982, on the designation of deferred investments in relation to dropped or discontinued investments.

It should be stated that out of 116 deferred investments named in Annex No 3 to Resolution No 125/82, 16 construction tasks previously adjudged to be dropped were transferred to the implementation by list by virtue of various decisions. The current list of discontinued capital-construction jobs now totals 601.



An analysis of the results and effects of verification of investment decisions shows a lack of discipline on the part of the investors, which reveals itself in a concealment of the actual situation and the decisions that they themselves made pertaining to the fate of capital-construction jobs begun in past years, which were financed principally out of budgetary funds. Many investors counted on budget subsidies and did not consider the possibility that additional financing of their endeavors would not be granted by this method. On the one hand, therefore, a process of adapting investments to current capabilities is being conducted, while on the other hand the startup of thousands of new investments out of the funds of the enterprises themselves is taking place.

### The Makeup of Deferred Capital Investments

According to Main Statistical Office data (as of the end of 1983), 1,227 investments have been deferred.

ORGBUD, which serves as an information and advisory center, has 562 reports (as of 30 April 1984) pertaining to deferred investments, which constitutes 93.5 percent of the total investments deferred. It should be stated that 601 deferred investments are not fully a component part of the 1,227 deferred investments shown in Main Statistical Office reports.

#### 1. The Structure of Deferred Investments

An examination of deferred investments according to sectors of the national economy, according to Main Statistical Office data as of 31 December 1982 (there are no suitable data for the end of 1983), shows that most investment tasks occur in agriculture: 420, or 26.9 percent of the total deferred investments. These are tasks in which the cost-estimate value does not exceed 60 million zlotys and are for the most part predicated on the import of feeds.

The next sector of the national economy in the list of deferred investments is industry: 379 investment tasks (24.3 percent of the total). The total cost-estimate value of these investments exceeds 66 percent of the cost-estimate value of all deferred investments.

The next sectors of the national economy from the standpoint of number of deferred tasks are the housing economy: 148 tasks (9.5 percent of the total); and construction: 131 tasks (8.4 percent of the total).

The above figures show that the decisions to defer investments in the particular sectors of the national economy are in keeping with the priorities which have been established.

Outlays for deferred tasks made from the beginning of implementation to the end of 1982 amounted to 135.2 billion zlotys, i.e., 27.3 percent of the cost-estimate value. The degree of advancement of investments in the specific sectors of the national economy is as follows:



<u>Sector</u>	<u>Cost-Estimate Value (in percent)</u>
Agriculture .....	48.3
Construction .....	45.1
Chemical industry .....	42.2
Wood-Paper industry .....	38.4
Electro-engineering industry ...	29.3

The largest share, quantitatively, in the freezing of deferred investments, falls to the following ministries or equivalent organizations:

<u>Ministry or Organization</u>	<u>Number of Investments</u>	<u>Percent of Total</u>
Central Union of Agricultural Producer Cooperatives .....	123	10.0
Ministry of Metallurgy and Machine Industry	112	9.1
Central Union of Housing Construction Cooperatives .....	81	6.6
Ministry of Construction and Construction Materials Industry .....	76	6.2
Central Union of Agricultural Circles and Organizations .....	66	5.4
Ministry of Agriculture and Food Economy ..	57	4.6
Ministry of Chemistry and Light Industry ..	56	4.6

The largest group of deferred investments, as the above table shows, are investments connected with farm-food production (animal farms, etc.).

The highest share in freezing of deferred investments in terms of value (Main Office of Statistics data as of the end of 1983) is in the Ministry of Metallurgy and Machine Industry and amounts to 51.2 billion zlotys (44.7 percent of total outlays). Second is the Ministry of Chemistry and Light Industry, 12 billion zlotys (10.45 percent of total outlays). Next are the Ministry of Construction and Construction Materials Industry, 10 billion zlotys (8.7 percent), the Ministry of Transportation, 6.3 billion zlotys, (5.5 percent), and the Ministry of Agriculture and Food Economy, 5.2 billion zlotys (4.5 percent).

According to these same data the total value of idle machinery and equipment in deferred investments at the end of 1983 amounted to 21.9 billion zlotys, of which 16.7 billion zlotys was from import, 8 billion zlotys coming from the second payments area [capitalist countries].

The deferred investments which are most advanced, on average, are under the control of the provincial offices. For example: in Radom, 83.6 percent; in Ciechanow, 80.7 percent; in Tarnobrzeg, 70.8 percent; and in Wloclawek, 67.2 percent. The ministerial investments are advanced to a much lower average

degree: Central Union of Agricultural Producer Cooperatives, 51.8 percent; Central Union of Agricultural Circles and Organizations, 47.2 percent; Ministry of Construction and Construction Materials Industry, 46.5 percent; Ministry of Agriculture and Food Economy, 26.1 percent; and Ministry of Metallurgy and Machine Industry, 25.9 percent. However, it should be noted here that the investments under the control of the provincial offices are those with relatively low unit cost-estimate values.

Considering the territorial distribution of the deferred investments, it can be said (on the basis of Statistical Office data as of the end of 1983) that in the typical industrialized Katowice Province, there is the largest concentration of freezing of investment capital (42 percent of total outlays) and the largest number of investments is deferred (17.7 percent of all deferred investments). These are generally typically industrial investments of high cost-estimate value, averaging approximately 181 billion zlotys.

Second in size of outlays is Kielce Province, 6.2 billion zlotys (5.4 percent of total outlays). In this province 43 investments have been deferred (3.5 percent of all deferred investments) with a cost-estimate value of approximately 24 billion zlotys (5.3 percent of the total cost-estimate value). In Kielce Province, industry and agriculture are the dominating typical structure of deferred investments.

In order of size of outlays next are Warsaw Capital Province, Gdansk Province and Opole Province.

An analysis of the state of advancement of deferred investments shows that those in provinces with highest outlays are the least advanced, not exceeding 30 percent. A much higher degree of advancement of deferred investments is seen in the following provinces: Konin, 62.4 percent; Torun, 58.1 percent; Elblag, 57.7 percent; and Rzeszow, 56.8 percent. It should be noted, however, that these provinces have relatively low amounts of deferred investments (10 to 17 investments), of a low average cost-estimate value.

## 2. Structure of Deferred Investments Selected for Resumption

As already mentioned, Council of Ministers' Resolution No 120/83 stated that 453 deferred investments qualified for continuation of implementation. It is anticipated that these investments will be resumed by the end of 1985. It is estimated outlays necessary to complete this group of investments have been set at approximately 160 billion zlotys (1982 prices).

Most of the deferred investments which have been selected for resumption are in industry, mainly in metallurgy and the machine industry. The outlays necessary to complete these investments total 107.1 billion zlotys, i.e., 67 percent of the total outlays indispensable for the completion of all resumed investments. Participating in the total sum of outlays, in order of amount, are: transportation and communication, 16.1 billion zlotys (10 percent); agriculture, 8.7 billion zlotys (5.4 percent), and construction, 7.4 billion zlotys (4.6 percent). The size of the outlays necessary for the completion of resumed investments in the remaining sectors of the national economy is much lower,

and totals from 0.3 percent (trade) to 2.8 percent (municipal economy) of the total amount of outlays allocated for completion of investments selected for resumption.

By ministries, most of the deferred investments selected for resumption (by number and value) are in the following: Ministry of Metallurgy and Machine Industry (80 investments and 51.7 billion zlotys); Ministry of Chemistry and Light Industry (32 and 32.1 billion); and Ministry of Agriculture and Food Economy (28 and 19 billion zlotys). The ministry in which deferred investments selected for resumption require the largest outlays for completion is the Ministry of Transportation, while the lowest requirements are in the Central Union of Agricultural Producer Cooperatives.

### 3. Structure of Discontinued Investments

A rather large number of discontinued investments were far more advanced than one of the criteria outlined in Council of Ministers' Order No 11 as the basis for qualifying the investment for discontinuance had provided (below 15 to 20 percent).

The numbers and degree of advancement of discontinued investments are shown in the table below.

Table 1. Number and Degree of Advancement of Discontinued Investments (as of 30 April 1984)

(1) Przedział zaawansowania %	(2) Liczba i stopień zaawansowania inwestycji i częściowych w poniesionych nakładach			
	(3) ogółem		w robotach bud.-mont.	
	liczba inwestycji		liczba inwestycji	
	(5)	(6) %	(5)	(6) %
0 - 10	188	20,4	201	11,7
10 - 20	111	11,9	98	12,1
20 - 30	81	10,9	55	6,9
30 - 40	57	10,1	29	3,2
40 - 50	33	8,9	27	4,9
50 - 60	30	5,1	26	4,9
60 - 70	44	7,9	36	6,4
70 - 80	29	5,9	20	3,9
80 - 90	16	2,9	15	2,7
90 - 100	14	2,4	21	3,9
brak danych	3	0,5	93	11,2

Source: Authors' data based on ORGBUD "information bank".

#### Key:

- |   |  |
|---|--|
| 1. Advancement interval, in percent                               | 5. Number of Investments                               |
| 2. Number and advancement of discontinued investments, in outlays | 6. Total share in discontinued investments, in percent |
| 3. Total  | 7. No data available                                   |
| 4. In construction-erection jobs                                  |  |

In accordance with the data contained in Annex No 2 to Resolution 120/83, most of the discontinued investments are in agriculture: 205 (40.9 percent of the total discontinued investments). Thus far, outlays for these investments make up 13.8 percent of the total outlays for discontinued investment.

The second sector of the national economy from the standpoint of number of discontinued investments is industry (mainly metallurgy and machine industry and chemical and light industry). In this sector, 88 investments were discontinued, at a total outlay value of 15.3 billion zlotys (27.2 percent of total outlays for discontinued investments).

In the construction sector, 46 investments were discontinued, for which 8.6 billion zlotys was expended. These outlays were allocated mainly for the construction of "house factories" and the construction or modernization of engineering facilities for construction enterprises.

According to Annex No 3 to Council of Ministers' Resolution No 125/82, 100 investment tasks of a cost-estimate value of approximately 111 billion zlotys and outlays amounting to 14.1 billion zlotys were found to qualify for discontinuance. Most of these investments are in the industry and construction sectors (84 percent). The total value of outlays for investment in these two sectors of the national economy amounts to approximately 96 percent of the total outlays for investments discontinued by the decisions of Resolution No 125/82.

The share of some ministries in the number of discontinued investments is as follows:

<u>Ministry or Organization</u>	<u>Number of Investments</u>	<u>Percent of Total</u>
Ministry of Construction and Construction		
Materials Industry .....	62	11.0
Ministry of Metallurgy and Machine Industry	59	10.5
Ministry of Mining and Power .....	43	7.7
Central Union of Agricultural Producer		
Cooperatives .....	38	6.8
Ministry of Chemistry and Light Industry .	37	6.6
Ministry of Agriculture and Food Economy .	28	5.0
Central Union of Agricultural Circles		
and Organizations .....	28	5.0

Most of the discontinued investments showed a low degree of advancement. However, a rather large percentage of investments are noted in which over 20 percent of the capital is frozen (one of the criteria for discontinuing an investment).

Following is a representation of the share of some provinces from the standpoint of number of discontinued investments (according to ORGBUD data as of 30 April 1984).



<u>Province</u>	<u>Number of Investments</u>	<u>Percent of Total</u>
Katowice.....	87	15.5
Warsaw Capital .....	39	6.9
Szczecin .....	24	4.3
Wroclaw .....	22	3.9
Poznan .....	19	3.4
Zielona Gora .....	19	3.4

In the provinces in which by number the freezing of investment capital is the highest, the number of investments advanced more than 20 percent is:

Katowice	- 46.0 percent
Warsaw Capital	- 38.5 percent
Szczecin	- 54.2 percent
Wroclaw	- 45.5 percent

#### Resumption of Work on Deferred Investments

Current laws governing deferred investments require the investors of deferred investments to resume work on them within the limits of their own capabilities or to sell them to other users through an unrestricted bidding process. These provisions are aimed mainly at settling the accounts of the outlays for the investment and to obtain a return on the credits used.

In resuming work on deferred investments it is generally understood to mean that they will be used for any kind of production or services, relatively soon, in order to avoid additional expenditures connected with the work stoppage and safeguarding of the job sites. Information collected at ORGBUD shows that the final results obtained, i.e., the assumption or resumption of work on investments by new users, are not fully satisfactory due to the great difficulties and high costs of adapting these investments to new purposes.

"Conversion" of deferred investments is limited mainly by the following factors:

- too low a degree of advancement on investment tasks which have been begun and then deferred,
- a relatively large number of the deferred investments are tasks involving plant modernization or expansion, as well as "line" investments (roads, power networks, etc.) and those connected with environmental protection (sewage-treatment plants, etc.),
- the deferred investments are not in keeping, to a large degree, with an observable demand for their resumption,
- lack of legal regulations governing companies which have foreign capital and the possibility of transferring deferred investments to private contractors, Polonia firms, and others,
- too large a volume of deferred investments.



According to ORGBUD data (as of 30 April 1984) work has been begun on 131 discontinued investments thus far.

The degree of advancement, by numbers of investments, of work on discontinued investments, is shown in Table 2.

Table 2. Numerical Breakdown of Degree of Advancement of Discontinued Investments on Which Work Was Begun

Advancement Interval, in Percent	Number of Investments on Which Work Was Begun	Share of Discontinued Investments on Which Work Was Begun (in Percent)
0-10	59	38.9
10-20	19	14.5
20-30	19	14.5
30-40	12	9.2
40-50	4	3.1
50-60	6	4.6
60-70	8	6.1
70-80	7	5.2
80-90	1	0.8
90-100	4	3.1

It might be concluded from the figures shown in Table 2 that investments that are not very far advanced (up to 30 percent) have the highest possibility of new startup. But this is the result of an accepted interpretation of new startup of investment, because this group includes:

- investments discontinued at the design stage,
- investments in which the construction of small buildings was begun which could be used for other purposes with minimal investment outlays (for example, the beginnings of the construction of a warehouse could be used as an umbrella roof),
- investments, for which only the land was developed (partially or completely) and was used in existing buildings,
- investments in which advancement was limited to safeguarding the building site, and as a result of discontinuance, the site remained as the investor's property or was transferred to town and gmina offices for purposes of agriculture or for use as garden plots.

The ORGBUD data show that out of 431 investments which were discontinued and on which work thus far has not been restarted, approximately 170 (39.5 percent) may be started up by the investors themselves, on their own, this year and in future years.

In accordance with Directive No 15 of the Chairman of the Planning Commission in the Council of Ministers and Ministry of Finance, dated 30 April 1984, on

the principles and procedures for conducting unrestricted auctions for the sale of capital from discontinued investments, investors are beginning to set up auctions.

Four-stage auctions will be held. The opening price in the first stage is equivalent to the current value of the investment, established on the basis of the outlays expended, revised in accordance with decision DB-U-3/82, dated 29 April 1982, of the undersecretary of state in the Price Affairs Office on changes in the prices of construction-erection buildings in 1982 and the Main Statistical Office Index of Costs and Prices for 1983. If the first stage of the auction does not bring a sale, the second stage will be conducted, in which the opening price will drop by 30 percent. If it is necessary to have a third stage, the opening price will be reduced by another 30 percent. The fourth stage of the auction will consist of open bidding with no minimum opening bid.

In evaluating the criteria for establishing the opening price at an unrestricted auction, it might be concluded that it is possible to quickly and cheaply come into possession of buildings on which construction has been stopped, without going through the long procedure of obtaining a site, preparing the necessary documentation, looking for a contractor, etc. The reality is much different, however. ORBUD has reports from investors about the poor results obtained at auctions, in view of the alleged "low appeal" of the investments offered for sale.

#### Final Comments

If the actions taken to make the deferred, and especially the discontinued, investments socially useful are to be accelerated and improved, the following conditions must be met:

- long-term programs for the country's economic development must be prepared, in which the required restructuralization of fixed assets is concretized, and deferred investments are efficiently utilized,
- there must be a better definition of the direction in which the deferred investments are managed, based on an examination of needs (for example, the number of indispensable production or service plants) in the priority branches of the economy,
- a register of deferred investments must be prepared, without regard to the investor or the source of the financing (with the exception of special investments), together with the intentions of the investors as to the fate of the investments, based on documented reserves of funds for financing them (submission of information should be compelled through legislative regulations, directives, etc.),
- a technical and economic evaluation should be made of each deferred investment to determine usefulness (by variants) for other purposes, particularly those which conform with the course of the development of the national economy and the needs of a given region of the country,
- a re-analysis of the effects of the situation should be made, in which tasks in priority branches of the national economy (food economy and housing construction) have a large share in deferred investments,

--in making decisions on deferring investments, the degree of advancement should not be treated as the leading criterion, but a compilation of the social and economic needs which must be satisfied should be prepared, in order of priority, retaining the indispensable criteria of economic effectiveness.

A number of factors, both stimulating and inhibiting, come into play when decisions are being made on taking over deferred investments.

The stimulating factors may include:

- a general slowdown of the rate of investment in the country and much more complex conditions for obtaining bank credits,
- a basic growth of costs and prices in construction, which fluctuates within the limits of over three times higher as compared with 1978 prices, and the possibility that an investment can be taken over relatively cheaply.

The factors which work against a decision to take over a deferred investment are:

- a lack of legal and economic principles, and also definite political viewpoints as to transferring deferred or discontinued investments in intersector and international systems,
- a relatively large number of individual deferred investments and single buildings, and thus high costs to adapt them for new purposes and high operating costs,
- the preliminary period of the application of economic reform, during which many enterprises are not able to determine their own economic situation and, in view of that, their prospects for expansion,
- the economic and political situation in the country, which has a definite influence on the development of firms which have foreign capital, including the Polonia firms.

Taking into account the conditions which exist and the elements which stimulate and inhibit during decisionmaking on taking over deferred investments, the report prepared by ORGBUD contains a number of detailed proposals to improve and accelerate the actions being taken to restart work on deferred investments, and particularly work on discontinued investments. These proposals are directed to decisionmaking and advisory offices and persons, and to future investors.

9295

CSO: 2600/359

POLAND

BRIEFS

ECONOMIC TALKS WITH EGYPT--The 10th session of the Polish-Egyptian Committee for Economic Cooperation, which was held in Cairo, analyzed the decisions of the 9th session as well as economic cooperation and trade in 1985. It is expected that Poland will export Polonez and Zuk cars, and San buses to Egypt in exchange for cotton, spare autoparts, and other goods, the value of which may reach \$20 million on each side. The traditional trade involving Egyptian cotton and Polish agro-aviation services, industrial products, equipment, railroad rails, and chemicals will continue. [Summary] [Warsaw TRYBUNA LUDU in Polish 8/9 Dec 84 p 7 AU]

CSO: 2600/410

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